

1922
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THE DEVELOPMENT OF RAILROADS IN THE UNITED STATES
DURING THE QUARTER OF A CENTURY SUCCEED-
ING THE CIVIL WAR

BY

TEH HSI CHEO

A. B., UNIVERSITY OF NANKING, 1915

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

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IN

THE GRADUATE SCHOOL

OF THE

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY
SUPERVISION BY TEH HSI CHEO

ENTITLED THE DEVELOPMENT OF RAILROADS IN THE UNITED STATES
DURING THE QUARTER OF A CENTURY SUCCEEDING THE CIVIL WAR

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR
THE DEGREE OF Master of Arts

Manuel H. Robinson
M. H. Robinson

In Charge of Thesis

Head of Department

Recommendation concurred in*

Committee
on
Final Examination*

*Required for doctor's degree but not for master's

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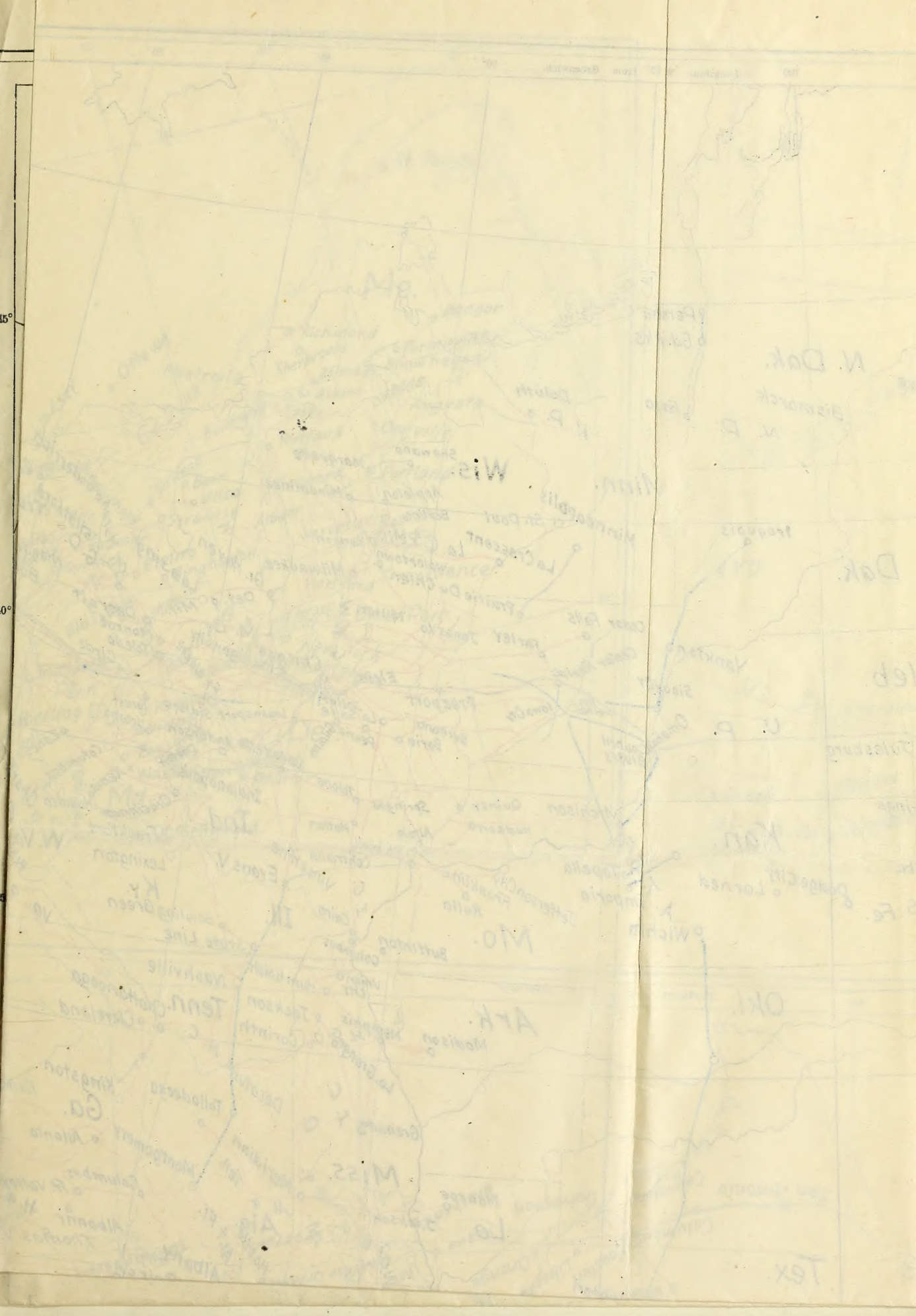
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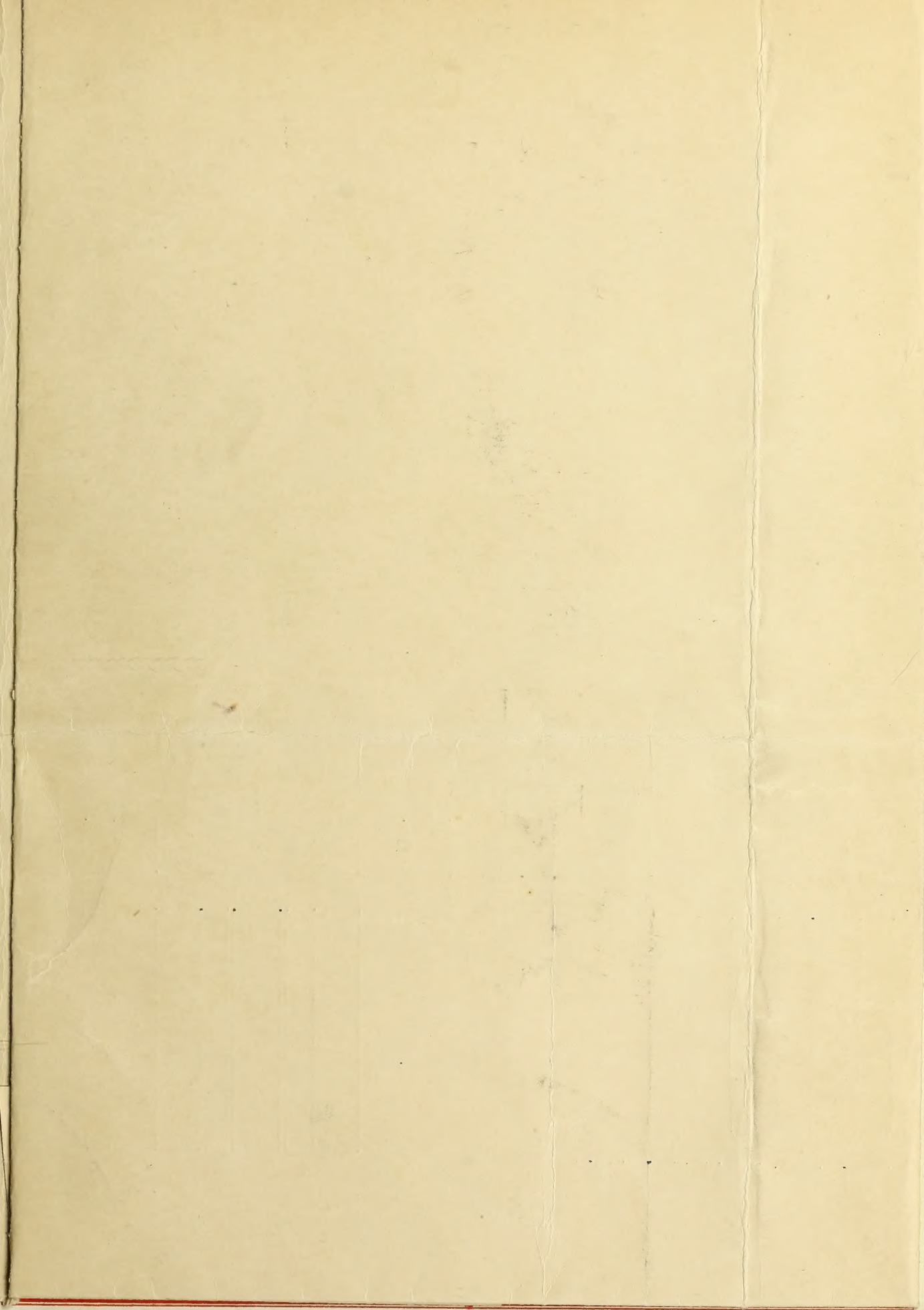


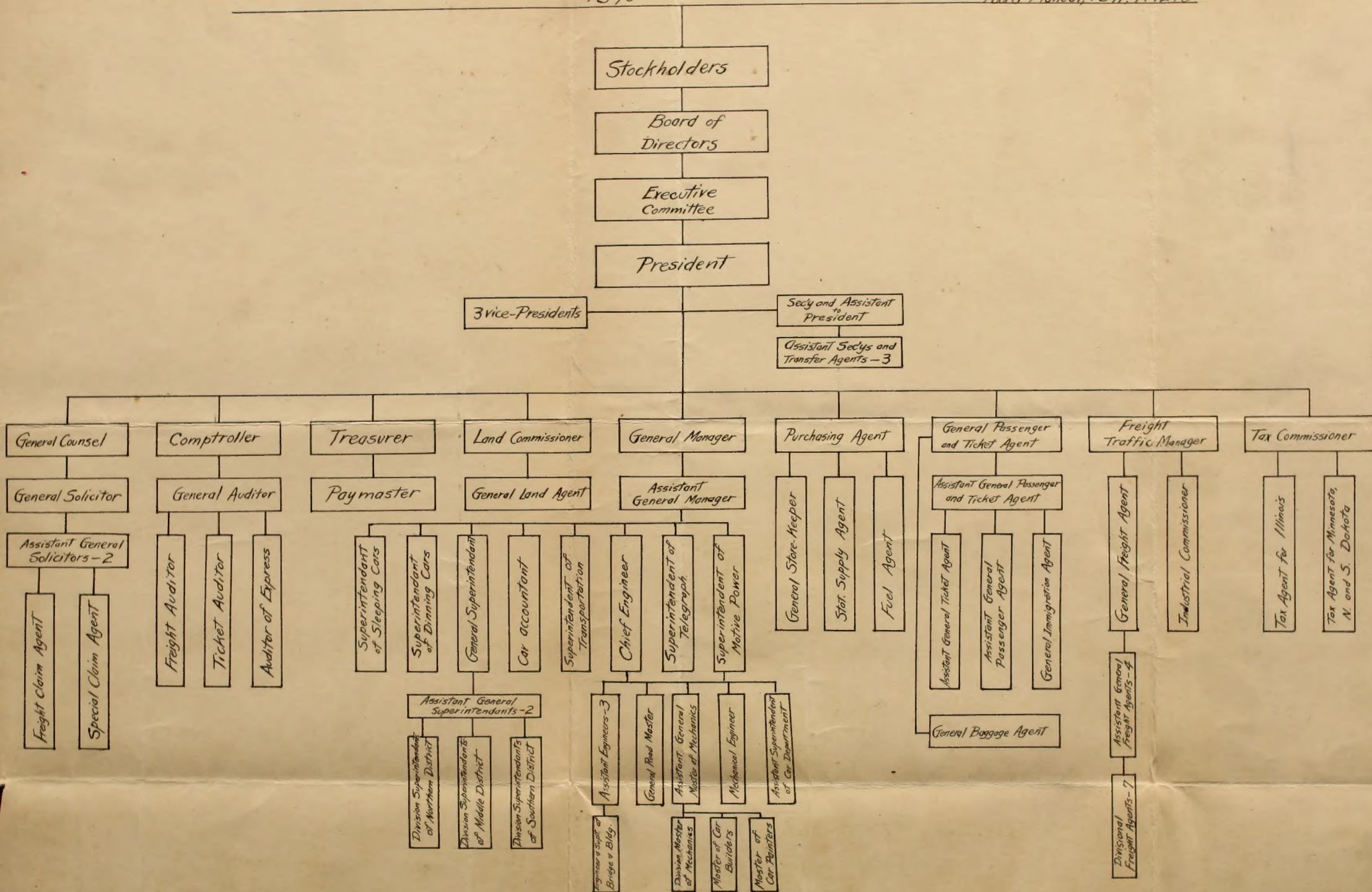


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1865-1870
1870-1880
1880-1890





The Development of Railroads in the United States
during the quarter of a century succeeding the
Civil War

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CHAPTER I

A Brief Summary of Railroad Construction preceding the Period

The railway in the United States came suddenly, in the midst of turnpike and canal building. In 1826 the first railway was built in this country. It was a granite carrier, connecting the quarries in the town of Quincy, Massachusetts, with the Neponset River, a distance of about three miles. This road was built for a patriotic purpose; its main object was to supply granite for the erection of Bunker Hill Monument.¹ Three years later, several other roads were partially completed, and the introduction of the steam locomotive engine inaugurated. Among the first steam roads which were built for general public use were the Baltimore and Ohio, the South Carolina and the Mohawk and Hudson.² The total mileage, at the end of 1830 was about thirty miles.

The success of these roads satisfied the public mind that the new means of transportation was a necessity to the country and they were looked upon as the most efficient instrument to aid in the settling and developing of the vacant interior. Their progress was consequently rapid. In 1840, ten years later, the total mileage reached 2,818. The roads constructed during this period radiated from several Atlantic seaports, of which Philadelphia was the most

1. Johnson and Van Metre, Principles of Railroad Transportation, p20

2. Ibid., p22.

important.³

In the year 1850 the length of the railways had increased to 9,021 miles, of which but a small portion was located in states west of the Alleghenies.⁴ In New England, where the country was most densely populated, the progress was greater, so that by the year 1850 nearly all the present trunk lines in that section had been completed.

During the succeeding decade the great lines west from the Hudson, the Delaware and the Chesapeake were brought into use, and the rail had been spread over a large part of the country lying eastward of the Mississippi; the total length in this period being something more than 30,626 miles. In the midst of this period the Mississippi had been reached and crossed, and railroads built in Missouri (chiefly by state loans) and Iowa, Tennessee, Kentucky (state aid) and the states south to the Gulf had been liberally furnished with railroads.⁵ The Civil War, from 1861-1865, brought construction almost to a standstill, but even during this period of agitation, the national legislature found time to plan and encourage the construction of those great works which now connect with the Pacific Coast. Through the agency of these roads commercial connections with China and Japan have been successfully developed.

3. Raper, C. L., Railway Transportation, pp182-83.

4. Johnson and Van Metre, Principles of Railroad Transportation, p1

5. Raper, C. L., Railway Transportation, p183.

CHAPTER II

Railroad Construction

In order to deal with the development of railroad construction in the United States during the quarter of a century succeeding the Civil War, it is most convenient to divide the railway system of the country into six groups. These groups are the Eastern, Central, Southern, Northwestern, and Pacific. This division is in every respect identical with those divisions adopted by the United States Census Office and the Interstate Commerce Commission, save for the fact that several of the ten groups which they enumerate are here combined in order to reduce their numbers.¹ These groups will be successively dealt with in the following pages.

(A) The Period from 1865-1870

(1) New Construction in the Eastern Group

In 1865, there was completed a branch line of the Pennsylvania Railroad from Blairsville to Freeport, on the Allegheny River. At Freeport, it connected with that of the Allegheny Valley Railroad running thence to Kittanning and then to the oil region. This branch was used by the Pennsylvania Railroad Company as an avenue for the coal, iron and petroleum trade between the Allegheny and Philadelphia. Previously all these staples had to go to Pittsburgh to find shipping hither but now the commerce floating down the Allegheny River might find a place for shipment east at Freeport.²

1. Van Oss, American Railroads as Investments, p183.

2. American Railroad Journal, 1865, p845.

In the same year, another branch line, known as the Chicago and Great Eastern Railway, from Chicago to Richmond, Indiana, a distance of 223 miles, was opened. This road made possible a through traffic to the Atlantic cities. Connection was made at Richmond, via the Little Miami and Central Ohio Railroad to Baltimore or over the Stuenbenville road, via Pittsburgh to Philadelphia and New York. It opened a fourth trunk line from Chicago to the East, and was the most important connection for the western roads which centered at Chicago.⁵ It did not, at first, become a branch line of the Pennsylvania Railroad. In 1868, it was taken over by the Columbus and Indiana Central Railway Company. The consolidated line embraced 788 miles of track which were distributed as follows: Chicago and Great Eastern, 223 miles; Indiana Central, 188 miles; Peoria, Logansport and Burlington, 133 miles; Union and Logansport, 93 miles.⁴ At the close of the seventh decade, the Pennsylvania Railroad had secured the control of the Columbus and Indiana Central Railway; thus the Chicago and Great Eastern Railway was involved.⁵

In 1867, the road operated by the Baltimore and Ohio Railroad Company comprised three distinct parts: the main stem, the Washington Branch and the Northwestern Virginia Railroad, which at this time was under lease to the Baltimore and Ohio Railroad Company.⁶ The length of these several lines were as follows:

3. American Railroad Journal, 1865, p227.
4. Ibid. 1868, p145.
5. Ringwalt, J. L., Development of Transportation Systems in the United States, p185,
6. American Railroad Journal, 1867, p338.

Baltimore and Ohio Railroad	373.6 miles
Washington Branch	50 "
Northwestern Virginia Railroad	103.5 "
Total length	513.1 miles

An extension of the Erie Railroad was completed in 1868.

The extension was from Buffalo to Niagara Falls. The route of this road was considerably shorter than the present line of the New York Central Railroad to the Falls. It was a very important extension, not only for the Erie Company but for the Great Western Railway of Canada and for the city of Buffalo. It gave the Erie another route to Chicago, independent of its connection with the Lake Shore Line; it gave the Great Western another route to New York and the East, independent of its connection with the New York Central, and it gave the city of Buffalo the advantage of another route to the Falls and brought a great increase of rail traffic which had hitherto gone by the way of Suspension Bridge and by Dunkirk.

(2) New Construction in the Central Group

In 1865, the so called "Lake Shore Line" was made up of the state line railroad, 68.34 miles in length; the Erie and North East, 18.50 miles; and the Cleveland, Painesville and Ashtabula, 95.49 miles. These roads extended from Buffalo, New York, to Cleveland, Ohio. To this might be added the Cleveland and Toledo, 112.50 miles and the Michigan Southern and Northern Indiana Railroad, 146 miles. These made up a total length of "Line" from Buffalo to

Chicago of 540.74 miles.

(3) New Construction in the Southern Group

The Chesapeake and Ohio Railroad, as it is now known, was a consolidation of the Virginia Central and the Covington and Ohio Railroads. This road was at that time completed and in operation from Richmond to the celebrated White Sulphur Springs of West Virginia, 227 miles, and there remained but 200 miles to be completed to carry it to the proposed terminus on the Ohio River at or near the mouth of the Big Sandy River, 150 miles above Cincinnati, and 350 miles below Pittsburgh.⁸ This road, when completed, would be one of the great trunk lines between the seaboard and the Mississippi Valley. Its principal traffic was the transportation of the iron ores which were found in vast quantities and superior quality near the center of its route, and the famous cannel and splint varieties of coal which were found in the Kanawha Valley. Besides the coal traffic, its advantages of low grades, cheap fuel and equable climate would enable it to carry the surplus breadstuffs and provisions of the Ohio Valley to their destination on the sea-board. It made very direct and easy connections with the 16,000 miles of inland navigation, and also with the 20,000 miles of western railroads.

(4) New Construction in the Northwestern Group

The extension of the Chicago and Northwestern Railway Company from Green Bay to Shawano was energetically carried forward. The Peninsula Railroad from that point to Marquette, on Lake Superior, was completed and regular trains were arranged.

8. American Railroad Journal, 1865, p1089.

9. Ibid 1870, p211

Its extension in the state of Iowa was now completed with-
in twenty five miles of the Missouri River at Omaha where it con-
nected with the main stem of the Great Union Pacific road, which
already carried freight and passengers three hundred miles beyond
the Omaha frontier.¹⁰ In 1867 the Iowa division of the Chicago and
Northwestern Railroad was finished as far as Council Bluffs, thus
completing the link between the seaboard and the North Platte, three
hundred miles west of the Missouri River.¹¹

In 1869, the lines of road owned and leased by this com-
pany were as follows: Chicago to Clinton, Iowa, 183.1 miles; Clinton
to the Missouri River, opposite Omaha, 352.9 miles -total 491 miles.
Junction to Freeport, 91 miles; Elgin to Richmond, 33 miles; Bel-
videre to Madison, 67.6 miles; Kenosha to Rockford, 72.4 miles,
Chicago to Milwaukee, 85 miles; Chicago to Fort Howard, 142.1 miles;
Escanaba to Lake Angeline Mines, 59 miles--total length of ~~main lines~~
1156 miles. Total length of main lines owned by the Company, 803.1
miles. The length of different divisions was as follows:¹²

Wisconsin Division,	314.1	miles
Galena "	261	"
Iowa "	354	"
Madison "	67.6	"
Peninsula "	72.4	"
Milwaukee "	85	"

Total as above 1156.0 miles.

10. American Railroad Journal, 1865, p. 1102.

11. Ibid., 1867, p. 56.

12. Ibid., 1869, p. 109.

In 1867, by the completion of the road from Cresco to Owatonna, about eighty-five miles known as the Iowa and Minnesota Divisions of the Milwaukee and St. Paul Railway, continuous railroad communication had been established between St. Paul and Milwaukee and the entire system radiating from Chicago. The length of the entire road from Milwaukee to St. Paul was about 420 miles, of which about 220 miles on the west, and 200 miles on the east side of the Mississippi. This portion of the road was formerly known as the Milwaukee and Prairie du Chien Railroad.

The Milwaukee and St. Paul Railway Company now owned 825 miles of railway in full operation-this mileage was ^{to} include the mileage of the Minnesota Central and the McGregor Western through consolidation. Every mile of this road was a productive property. The public had now a connected line of railway from the city of New York, via the Milwaukee and St. Paul Railway to Minneapolis, St. Paul and St. Cloud, a distance of more than 1500 miles, about one third of which was over the Milwaukee and St. Paul Railway. The Winona and St. Peter, the St. Paul and Pacific, the Minnesota Valley the Minnesota Southern, the La Crosse, Tremplean and Prescott and the Tomah and Lake Superior Railroad Companies, which were tributaries or connecting roads, were all near completion. This new line of road passed through the most fertile and densely populated counties of Northern Iowa and Minnesota. It had undisputed possession of the trade of an immense region, unsurpassed for the richness of

its soil and the industry and enterprise of its people, from whose immense granaries a golden stream of wheat and other products would be sent forth over this railroad.

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In 1868, the lines of this Company would be known and designated as follows:

1. From Milwaukee to Prairie du Chien and from Milton to Monroe, as the Prairie du Chien Division.

2. From Milwaukee to La Crosse via Watertown, and from Watertown to Sun Prairie, as the La Crosse Division.

3. From North Milwaukee to Portage, and from Haricon to Berlin and Omro, as the Northern Division.

4. From McGregor to Minneapolis, as the Iowa and Minnesota Division.

The following table shows the length of each of the divisions mentioned above.

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La Crosse Division	222 Miles.
Prairie du Chien Division	135 "
Northern Division	143 "
Iowa and Minnesota Division	110 "

Total length 825 Miles.

(5) New Construction in the Pacific Group

The great enterprise of the railroad history of the United States during the seventh decade was the building of the

14. American Railroad Journal, 1865, p.169.

15. Ibid., 1868, p.169.

transcontinental line, known as the Union Pacific. This road was built to unite the Atlantic and the Pacific by its iron bonds. The main line built by the Union Pacific Railroad Company was from Omaha to Ogden. This company was chartered in 1862 and rechartered in 1864. In order to build this road, the Government gave the company the assistance. The company received from the Government a land grant of 12,600 acres for every mile of road completed, and, in addition to this, received a large loan fund, amounting to \$16,000, \$32,000 and \$48,000 per mile, the amounts varying with the changing¹⁶ cost of construction in the mountains, desert and prairie.

In 1865, the work on the eastern division commencing at Omaha, Nebraska, and striking due west for the passes of the Rocky Mountains was so far advanced that 100 miles of the road were completed.¹⁷ In 1866, it had been completed from Kansas City, up the valley of the Kansas River to the vicinity of Manhattan, for a distance of 100 miles on the main line, while the track from Manhattan to Fort Reiley, a distance of 40 miles, had been nearly completed. Two hundred miles of track from Kansas City were opened¹⁸ in 1867. By the end of the same year, the Union Pacific Railroad extended a distance of 525 miles west from Omaha to the eastern base of the Rocky Mountains. In 1868, the mileage west of Omaha had increased to 698 miles. Not long afterwards, the Union Pacific had reached to the Medicine Row River, in Wyoming Territory, and the construction was pushed forward so energetically that the line was

16. Van Oss, American Railroads as Investments, p.627.

17. American Railroad Journal, 1865, p.531.

18. Ibid., 1867, p.243.

opened on May 10, 1869. At the time of its completion the Union Pacific had a length of 1,042 miles, and ran from Omaha to Ogden, where it connected with the Central Pacific for San Francisco.¹⁹

(B) The Period from 1870-1890

(1) New Construction in the Eastern Group

In 1874 the first division of the Chicago extension of the Baltimore and Ohio Railroad Company was opened. This line embraced the road from Centreton, on the Lake Erie division to Deshler, on the Cincinnati, Hamilton and Dayton Railroad, a distance of sixty-three miles. By means of this extension the increased grain business centered in Toledo together with the traffic drained by the Cincinnati, Hamilton and Dayton Railroad, were made tributary to Baltimore. This line passed through the flourishing towns of Republic, Tiffin and Fostoria. At Tiffin it intersected with the Cincinnati, Sandusky and Cleveland Railway, and at Fostoria with the Lake Erie and Louisville Railway, both of which were expected to prove valuable grain feeders.²⁰ The remaining 206 miles of the line to Chicago, were to be finished at an early date. When the whole line to Chicago was complete, it gave the Baltimore and Ohio a continuous road between that city and Chicago, a distance of 811 miles.

(2) New Construction in the Southern Group

The great line of railroad upon which the Chesapeake and Ohio Railroad was based was already completed and opened for traffic from Richmond to the White Sulphur Springs, a distance of 227 miles.

19. Van Oss, American Railroads as Investments, p.622

20. American Railroad Journal, 1874, p.35

The portion between the Ohio River and the coal deposits of the Kanawha Valley, 100 miles distant, was nearly ready for business. The intermediate section of about 100 miles was also vigorously advanced and would be completed within a very short time. When the whole line was brought into completion, it would form a continuous trunk line from the navigable waters of the Atlantic to the Ohio River.²¹

Happily, this road from the capacious, ever-open, Chesapeake navigation to the center of the Ohio Valley, was completed in 1873. It formed the Grand Central Trunk Line of the railroad system of this country. It possessed peculiar advantages for through traffic of western products for consumption and shipment to the Eastern seaboard states. It had a special advantage as a direct, attractive, and speedy passenger line between a large number of the western and southwestern cities and Washington, Baltimore, Philadelphia and New York.

It was also advantageously situated to become a cheap and favored route for both immigrants and merchandise between Europe and the west. Vessels of the largest class would be able to land alongside the wharves at its deep-water terminus and transfer their passengers and cargoes directly from shipboard to the cars, thus, avoiding the annoyance, expense, and delay incident to other routes.

At Richmond connection was made with the railroads leading north and northeast via the Richmond and Fredericksburg Railroad to Alexandria and Washington and also with the railroad lines leading

21. American Railroad Journal, 1871, p.1207.

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south of Petersburg, Norfolk, Wilmington, Charlatte, Augusta, Charleston, Savannah and Macon.

At Gordonsville, by means of this Orange and Alexandria Railroad, regular connections were made for Washington, Baltimore, Philadelphia, and New York by continuous all-rail routes.

Connections at the western terminus, Huntington, were made with regular packet lines of steamers to Ironton, Portsmouth and Cincinnati, and through them with the United States mail line of steamers to Louisville, or the short line of road leading southwest or northwest. The trip to Cincinnati, 175 miles, was made downward in fifteen hours, and upward in twenty-four to thirty hours. Boats stopping at Huntington on their way to and from New Orleans, St. Louis, Cairo or intermediate points, could easily transfer freight bound in either direction.²²

In 1871, the Illinois Central Railroad brought under its control the section of the Iowa Falls and Sioux City Railroad between Fort Dodge and Sioux City. This ¹competed the company's leased line from Dubuque to Sioux City, a line 326 miles long and which in connection with the Galena Division of the Northwestern formed a very direct route between Chicago and Sioux City, 514 miles.

A link of 85 miles between Cairo, Illinois, and Jackson, Tennessee, was built by the Illinois Central and the Southern Railroad Association. This link was to establish close connection with the entire Southern Railroad System, avoiding a water transfer of

22. American Railroad Journal, 1873, p.159

23. The Railroad Gazette, 1871, p.60.

twenty miles between Cairo and Columbus, Kentucky.²⁴ Moreover, this road rendered Chicago an uninterrupted railway service to Mobile and New Orleans by the Illinois Central Railroad over which passenger trains could run without any change of cars whatever.

In 1878, the Kankakee and Southwestern branch of the Illinois Central Railroad, thirty-seven miles in length, was finished. It traversed the territory from Kankakee to Chatsworth, Illinois, and in the same year, the company took possession of the Dakota Southern Railway, sixty-two miles in length. It extended from Sioux City, Iowa, to Yankton in the Dakota Territory. It passed through a fertile, wheat-growing country, and Southern Dakota and Northern Nebraska were its tributaries.²⁵

When the extension of the Illinois Central Railroad reached New Orleans in 1880, it had increased its traffic in carrying fruits and vegetables from the Southern States and the southern portion of the state of Mississippi to Chicago and the North. Its line from the city of New Orleans to the southern extremity of Illinois traversed 305 miles, while, from the latter point as far south as the north line of Tennessee, while its main line from Chicago to Cairo was no less than 458 miles long. From the latter point the Chicago, St. Louis and New Orleans road, owned by the Illinois Central, ran straight on to the Gulf at New Orleans, 550 miles, so that the entire line from Chicago to New Orleans was 900 miles long. So when the winter still reigned at the northern ter-

24. American Railroad Journal, 1873, p.115.

25. Ibid., 1878, p.1249.

minus, gardens and orchards were in bloom at the opposite end of the route and as the season advanced the line of ripened vegetation moved northward until the autumn harvests were ripe on the shore of Lake Michigan.

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(3) New Construction in the Northwestern Group

In 1867, the Chicago and Northwestern Railway was acquired by purchase the ownership of the La Crosse, Trempealeau and Prescott, and the Winona and St. Peter Railroads. The La Crosse, Trempealeau and Prescott Railroad consisted of a link of twenty-eight miles of road completed in 1870. This line extended from a point opposite the city of Winona, down the eastern side of the Mississippi River to a point about three miles east of the city of La Crosse. At Winona, a bridge was built to connect the Winona and St. Paul Railway. At its southern terminus it now connected with the Milwaukee and St. Paul Railroad, but its ultimate connection was to be made with the new Madison Extension Line, which was being constructed from Madison to a junction with this road.

Another branch of the Chicago and Northwestern Railway, known as the Menominee Extension, a distance of 120 miles, was completed in 1872. It gave the Chicago and Northwestern Railroad a direct all-rail line between Chicago and Lake Superior. Chicago was thus brought into direct rail communication with the very heart of the great lumber region of Wisconsin. The extension, together with new new lines completed during the year, added 400 miles to the

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Northwestern, giving it a total of about 2,000 miles of road.

In 1878, the Chicago and Northwestern Railway Company operated the New Maple River Railway in Western Iowa, fifty-nine miles, and the Menominee River Railway twenty-six miles in the upper Peninsula of Michigan, just west of Green Bay. This made the total worked by the company 2,978 miles.²⁸

The Chicago, Milwaukee and St. Paul Railroad, as is now known, was a consolidation of the St. Paul and Chicago and the St. Paul and Milwaukee.²⁹ In 1874, it possessed 1,413 miles of completed road, situated in the following states, viz: in Wisconsin, 677 miles; in Minnesota, 351 miles; in Iowa, 337 miles; and in Illinois, 47 miles.

The Milwaukee and Portage Railroad was brought under control by the Chicago, Milwaukee and St. Paul Railroad in 1878 through the purchase of lands owned by that corporation. A majority of the stocks and bonds of the Dubuque and Southwestern Railroad was also purchased. This latter purchase afforded the Chicago, Milwaukee and St. Paul Railroad a direct line from Milwaukee to Cedar Rapids, Iowa via the Western Union, the Sabula, Ackley and Dakota, and the Dubuque and Southwestern Railroads. All of these roads were important in increasing the traffic of the Chicago, Milwaukee and St. Paul Railway Company.³⁰

The Chicago, Milwaukee and St. Paul Railway had gained

27. American Railroad Journal, 1872, p.1604.

28. Ibid., 1878, p.202.

29. Van Oss, American Railroads as Investments, p.463

30. American Railroad Journal, 1878, p.546,

acquisition of the Chicago, Clinton, Dubuque and Minnesota and Wisconsin Valley Railroads and were formally transferred under their control in 1880. These roads were operated as the Dubuque Division³¹ and the Wisconsin Valley Railroad as the Wisconsin Valley Division. The former ran from Clinton, Iowa, to La Crescent, Minnesota, a distance of 420 miles and the latter ran from Toma, Wisconsin, to Jenney, Wisconsin, a distance of 108 miles.³²

The Wabash, St. Louis and Pacific Railroad was a consolidation of the Wabash and the St. Louis, Kansas City and Northern Railroad Companies. This company in 1876 controlled about 2,000 miles of road which extended from Toledo, Detroit and Chicago in the east to St. Louis, Kansas City and Omaha in the west. The lines of the consolidated road were as follows:³³

1. Wabash Lines	Miles
Toledo to East Louis	433
Chicago and Paducah	157
Chicago and Strawn	95
Eel River	94
Decatur to Quincy and Hannibal	201
Other branches	68

Total miles	1048
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31. American Railroad Journal, 1880, p.1,289.

32. Ibid., 1880, p.1,038.

33. Ibid., 1876, p.386.

2. St. Louis, Kansas City and Northern Lines	Miles
St. Louis and Kansas City	275
Moberly and Ottumwa	131
Brunswick to Pattersburg	81
Pattersburg to Council Bluffs	146
Lexington Junction to St. Joseph	76
Quincy, Missouri and Pacific	192
Other branches	37

Total miles 848

Total length of lines. 1896 miles.

The extension of the Eel River Railroad from Butter to Detroit, and the acquisition of the Pekin and Southwestern Railroad, would give the new company a control of more than 2,000 miles of road.³⁴

The Indianapolis, Peru and Chicago Railway was purchased in 1881 by the Wabash, St. Louis and Pacific Railroad Company. It extended from Indianapolis north to Michigan City, on Lake Michigan, crossing the main line at Peru, and the Logansport and Detroit line at Denver, Indiana. The length of this road was 161 miles.³⁵ Another 300 miles of road was thus added to the Wabash, St. Louis and Pacific Railroad.

In 1872, the Wisconsin Central Railroad had leased the road of the Milwaukee, Lake Shore and Western Railroad Company. This

34. American Railroad Journal, 1876, p.1,263.

35. Ibid., 1881, p.997.

company was a consolidation of the Milwaukee, Manitowoc and Green Bay, and the Appleton and New London Railroad companies. This leased road extended from Appleton to Manitowoc, thence to Milwaukee, and passed through a densely settled country. This lease completed the line of the Wisconsin Central Railroad from Lake Superior to Manitowoc on Lake Michigan where it connected by boat across the lake with railroads which ran directly to Detroit and New York. It thus afforded the shortest line from Lake Superior. It had also a short line from Manitowoc through Sheboygan to Milwaukee, where it connected directly with the Chicago and Northwestern to Chicago. This line from the termination of the Northern Pacific to Chicago, was about 100 miles, and shorter than any other route. The country through which this road passed comprised some of the very best farming lands in the United States. The pine and hard-wood timber, and the iron property were not to be surpassed in value by any other section in the country.

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(4) New Construction in the Southwestern Group

The most important construction in this period was the Atchison, Topeka and Santa Fe Railroad. The charter of this road was granted in 1863. The route prescribed was from Atchison, on the Missouri River, to the western boundary of Kansas, in the direction of Santa Fe, New Mexico, a distance estimated at 500 miles. The importance of this road was the fact that it formed a link in the great line between the Atlantic and Pacific, passing through the

most valuable and productive mining regions of Colorado and New Mexico.

In consideration of the building of this road, Congress endowed the company with a valuable land amounting to 6,400 acres for every mile of road constructed, on condition, that the entire railway should be completed within the ten years expiring in March, 1873.³⁷ This clause nearly deprived the company of its land grant, for the depression following in the wake of the war rendered construction an impossibility, and six years elapsed before a start was made.³⁸ In 1869, 28 miles were constructed; in 1870, 34 miles. In 1871, the company had 106 miles in operation from Topeka to Florence, and the work from Florence to Newton on the south, a distance of 50 miles, was pushed rapidly to completion.³⁹ The section between Topeka and Atchison, was completed as late as May 15, 1872. A year and ten months remained before the expiration of the period stipulated under the Land Grant Act, and the company had built nearly one-fourth of its line; yet so energetically did its managers push work forward that the requisite 340 miles were completed within seven months, the eastern boundary of Colorado being reached December 28, 1872.⁴⁰

The line of the Atchison, Topeka, and Santa Fe Railroad was extended to Pueblo, Colorado, in 1874. And at the same time, the local line, known as the Pueblo and Salt Lake Railroad, was rapidly

37. Van Oss, American Railroads as Investments, p.558

38. Ibid., p.558.

39. American Railroad Journal, 1871, p.713.

40. Van Oss, American Railroads as Investments, p.559.

built eastward, to connect with the Atchison, Topeka and Santa Fe at Grenada, the present terminus of the latter road. The section was to afford a continuous line of railway under one direction, from the Missouri River, at Atchison, to the foot of the Rocky Mountains. ⁴¹

The extensions of the Atchison, Topeka and Santa Fe Railroad were destined to open up a large section of country, rich in mineral and agricultural resources. The Pueblo and Arkansas River, about 20 miles west of Ft. Lyon, and ran southwesterly via Trinidad and the Raton passed to the south line of Colorado. This extension was a distance of 95.5 miles.

The New Mexico and Southern Pacific Railroad started from the north line of New Mexico, at the terminus of the Pueblo and Arkansas Valley Railroad, Southern Division, and ran on the west side of the Rocky Mountain range in a southwesterly direction to Las Vegas, 118 miles, and thence to the Rio Grande River, at or near Albuquerque, about 129.5 miles. The whole extension in this direction was about 343 miles. The resources of this part of the country were very great. They consisted in part of coal, timber, (from the Raton Mountains), live stock, wool, hides, ore, and bullion, and as a further business for the road there was a large amount of general traffic, such as grain, machinery and the like.

The mining business at this time was quite limited, owing to the fact that ore had to be hauled hundreds of miles by ox teams before they reached the railroad terminal. ⁴² Thus it was

41. American Railroad Journal, 1874, p.1,083.

42. Ibid., 1878, p.874-75

difficult for the road to increase its traffic. However, the advent of the road made attempts to decrease the distance of hauling by ox teams and to induce interested parties to open new mines.

(5) ¹New Construction in the Pacific Group

The Northern Pacific Railroad was chartered by the Act of Congress of July 2, 1864. It received a land grant of 12,600 acres for every mile constructed in states and twice that area for every mile completed in territories. Construction begun in 1869, and the section from Duluth, the extreme westerly end of Lake Superior, to Bismarck, on the Missouri River, to Tacoma, on Puget Sound, a distance of 105.5 miles, was completed in 1873.⁴³ At Tacoma, communication was extended a distance of 400 miles to the Columbia River by means of the Oregon Steam Navigation Company. This afforded direct means of communication and transportation between the territories of Idaho and Washington and the state of Oregon and the navigable waters of the Pacific. Tacoma was the terminus of the Northern Pacific Railroad. It was finely situated at Commencement Bay, an excellent harbor in Puget Sound.

In 1874 the company was unable to withstand the strain of the financial crisis and defaulted on the interest of its bonds, as a result of which its affairs were temporarily entrusted to the management of a receiver, until the property was sold in foreclosure in 1875 and purchased by a new company, organized in the interest of the bond and stock holders of the old. The completion of this road was

43. American Railroad Journal, 1873, p.561.

very important. It was not only of great commercial consequence as the means of bringing into immediate connection with the eastern markets, an immense and very valuable agricultural region, hitherto unimproved; but it was of vast importance as a powerful lever to aid the government in controlling many thousands of Indians.

In 1880 the Northern Pacific Railroad Company operated 716 miles of main track, divided as follows: Duluth to Brainerd, 115 miles; Brainerd to Fargo, 133 miles; Fargo to Bismarck, 154 miles; Bismarck to Glendive River, 103 miles; Brainers to St. Paul, 131
44 miles.

(C) The Period from 1880-1890

The new construction from 1880-1890 consisted chiefly of short lines. These were used to expand old systems or to create new ones. More than sixty per cent of the new construction of the ninth decade was institutes lying west of the Mississippi River. Four important new transcontinental lines leading from the Missouri or states west of the lower Mississippi to the Pacific Coast were completed.

(1) New Construction in the Central Group

In 1832, the New York, Chicago and St. Louis Railroad was completed. It closely paralleled the main line of the Lake Shore along its entire system, more than five hundred miles, from Buffalo to Chicago. Soon after the road was finished a controlling interest in the stock of the company was purchased by the Lake
45 Shore.

44. American Railroad Journal, 1880, p.843.

45. Ringwalt, Development of Transportation System in the U. S., 1934.

(2) New Construction in the Southern Group

The Louisville and Nashville, during the ninth decade, built a number of extensions or branches in Kentucky, Alabama and Tennessee. In 1887 it had under construction an extension of the Bristolown branch, 22 miles, the Indiana, Alabama and Texas branch, 37 miles, and an extension from Corbin to Pineville, Kentucky, 30 miles. When completed, several hundred miles of new road were added to its system.

(3) New Construction in the Northwestern Group

The Chicago and Northwestern's new Dakota line was completed in 1883. The extension was from Harwood, Iowa, northwest to Irapuato, Dakota, a distance of 126 miles. It completed a line extending from the northern Iowa Division at Eagle Grove, Iowa, east to Harwood and thence northwest to the Dakota Central line at Irapuato, a distance of 288 miles in all. It did not only open a new country, but also afforded the Dakota Central line a new outlet east by way of the Northern Iowa Division.

At the end of 1880, the Chicago and Northwestern owned and operated 2,513 miles. In 1888, it operated 4,101 miles of its roads and controlled 1,339 miles of the Chicago, St. Paul, Minneapolis and Omaha, 723 miles of the Fremont, Elkhorn and Missouri Valley, 77 miles of Wyoming Central, and 107 miles of Sioux City and Pacific, the total owned and controlled being 6,347 miles.

In 1881, a branch line of the Wabash, St. Louis and Pacific, shown as the Chicago and Wabash road, was completed. The whole length of this road was 92 miles. Its chief value was to give the

46. Railroad Age Gazette, 1883, p.596.

Wabash through lines from Chicago as follows: To Burlington, Iowa, 261 miles; to Kansas City, 513 miles; to Keokuk, 270 miles; and to St. Louis, 286 miles.⁴⁷

In 1882, Council Bluffs' extension of the Chicago, Milwaukee and St. Paul was finished. Regular trains had now begun to run to Coon Rapids, Iowa, 175 miles from the beginning of the extension at Marion.⁴⁸ In the same year, the twelve-mile extension of the Hastings and Dakota Division from Frederick, Dakota, to Ellendale, and the Stillwater branch from Hastings, Minnesota, eighteen miles north to Lakeland, were completed.

The last rail on the new branch of the Chicago, Milwaukee and St. Paul, from Cedar Rapids, Iowa, south by west through Sigourney to Ottumwa, was laid in 1884. The new branch was ninety miles long, and carried the company into a section of Iowa south of any heretofore reached by its lines, giving it access not only to several large and important towns, but also to a country rich in coal.

The length of the lines owned and operated in 1880, by the Chicago, Milwaukee and St. Paul was 2,251 miles in Illinois, Wisconsin, Iowa and Minnesota. The total number of miles at the end of 1887, was 5,669. A large percentage of this increase of 3,418 miles consisted of new lines, located chiefly in the group of Northwestern states, but one important branch extended through

47. Railroad Age Gazette, 1881, p.42

48. Ibid., 1882, p.273

Missouri, while others were in Wisconsin.⁴⁹ The mileage of this system was especially large in Wisconsin, Iowa, Minnesota, and Dakota.

In 1880, the length of lines operated by the Chicago, Burlington and Quincy was 1,856 miles. The system was greatly expanded during the ninth decade. In 1881, it acquired the Burlington and Missouri River Railroad in Nebraska and the Kansas City, St. Joseph and Council Bluffs; in 1883 the Kansas City and St. Joseph was absorbed; in 1885 a traffic agreement was made with the Burlington and Northern, which company came under complete control in 1890, through purchase of a majority of stock. At the end of 1899, the system included 2,063 miles in Illinois, Iowa and Missouri and 2,736 miles of the Burlington and Missouri River Railroad in Nebraska. These lines combined, ^e linked Chicago on the east, St. Paul on the north, St. Louis on the south, Cheyenne, Denver, and more western points in Colorado on the west.⁵⁰

(4) New Construction in the Southwestern Group

The Atchison, Topeka and Santa Fe's Manhattan, Alma and Burlington branch was finished in 1881. It extended from a junction with the main line at Burlington, Kansas, 16 miles southwest from Atchison and 26 miles from Topeka, then northwestward 56.5 miles to the Kansas Pacific at Manhattan.⁵¹

One year later, this company's New Mexico and Arizona line,

49. Railroad Age Gazette, 1887, n.102.

50. Van Oss, American Railroads as Investments, p495-97.

51. Railroad Age Gazette, 1881, p.49

which ran from Benson, Arizona, on the Southern Pacific, 173 miles⁵² west of Deming, to Guaymas on the Gulf of California was completed. The Kansas City and Emporia branch, which started from Emporia, Kansas, on the main line eastward to Ottawa, southward a distance of 53 miles⁵³ was completed in 1884. This branch, in connection with the Southern Kansas main line, completed an additional line from Kansas City to Emporia, 114 miles long or some 13 miles shorter than the present main line.

A branch from Jamez to Bernalillo was completed in 1885. It was considered one of the most important new lines because of the excellent territory it traversed. Besides opening up a large area of grazing land, it opened up a mining region. This branch also skirted the wooded country lying upon the edge of the Rio Grande Valley and rendered accessible the valuable supply of lumber from that region.

In 1879, it operated 1,167 miles of main line and branches. In 1889 it owned 7,374 miles of railway, distributed as follows: Atchison system, 2,090.85; Southern Kansas system, 935.50; Sonora system, 350.19; sundry lines owned entirely or controlled, including the Chicago, Santa Fe and California, 498.25; Chicago, Kansas and Western, 903.16; Gulf Colorado and Santa Fe, California Southern, California Central, and other roads, 2,974.83; Atlantic and Pacific, controlled jointly with the St. Louis and San Fran-

52. Railroad Age Gazette, 1882, p.414.

53. Ibid., 1884, p.385.

cisco, 918.86. A large portion of the increased mileage was constructed after 1880. It represented numerous extensions in Kansas, leading on the west into Colorado and New Mexico, and thence through Arizona, by the Atlantic and Pacific, into Southern California, with a branch leading into northwestern Mexico, and a close connection at El Paso with the Mexican Central, while from eastern Kansas a line (the Gulf, Colorado, and Santa Fe) was constructed through the Indian Territory and Texas to Galveston, Texas.

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In 1882, the new Omaha Extension of the Missouri Pacific was completed. This extension started from Atchison, Kansas, and ran by Hiawatha, Falls City, Nebraska, Dunbar, Sheridan, Weeping Water and Louisville to House Junction, 145 miles. From House Junction to Omaha, 17 miles, the Union Pacific track was used, making the distance from Atchison to Omaha 162 miles. By this route it was 209 miles from Kansas City to Omaha, and 492 miles from St. Louis to Omaha.

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By the lease of the Wabash, St. Louis and Pacific Road, the Missouri Pacific added the 3,518 miles of road worked by that company to the 5,896 miles which it already controlled, making a total of 9,414 miles of road under one management. The extent of this system may be shown by the fact that it extended from Toledo on the east to Omaha on the west, and from Toledo and Chicago on the north to Galveston and to Laredo on the Rio Grande in the south, and

54. Ringwalt, Development of Transportation System in the United States, p.354.

55. Railroad Age Gazette, 1882, p.309.

to El Paso on the southwest.

Besides the length of lines of the Wabash, St. Louis and Pacific, the Missouri Pacific in 1888 operated 7,043 miles of road classified under the following heads: Missouri Pacific, 2,357 miles; St. Louis, Iron Mountain and Southern, 1,144; Fort Scott, Wichita and Western, 306; Missouri, Kansas and Texas, 1,611; Central Branch Union Pacific, 307; other lines, 403 miles. Aside from the main lines of the system, the increase of mileage was largely through construction after 1879.⁵⁷

(5) New Construction in the Pacific Group

In 1881, the Denver and Rio Grande system was extended 450 miles to Durango. This extension traversed a rich valley, popularly known as Animas Valley, where immense coal deposits were found. The valley was also the natural southern outlet for the rich mining district of San Juan County on the east and north, a region covering an area equal in extent to the state of Massachusetts,⁵⁸ and intersected by various mountain regions and many rivers.

In 1882, the Pueblo and San Juan Division was completed to Silverton, Colorado, in the center of the San Juan mining region, from which a large business had already reached the road. Silverton was 45 miles northward from the old terminus at Durango, 375 miles from South Pueblo, and 495 miles from Denver.

In 1883, the Denver and Rio Grande completed a line 734 miles in length from Denver to Salt Lake. Of this section from

56. Railroad Age Gazette, 1882, p.309.

57. Kingwalt, Development of Transportation System in the United States, p.357

58. American Railroad Journal, 1883, p.51.

Salt Lake to the Colorado line, 272 miles was owned by the Denver and Rio Grande Western Company, a separate organization, but which was entirely controlled by the Denver and Rio Grande.

In 1880, the length of lines operated by the Denver and Rio Grande was 500 miles. By 1888, it had 1,687 miles. The Western terminus of the Denver and Rio Grande extension was at Ogden, Utah, where a connection with the Central Pacific was made, and a new through route from the Missouri River to Ogden was formed during the ninth decade by this combination and a close connection on the east with the Chicago, Burlington and Quincy system.

The entire length of the Northern Pacific Railroad between Lake Superior and Puget Sound was completed in 1883. This main line was 1,911 miles long.⁵⁹ In the same year, the Palouse Branch of the system was finished and opened for business as far as Colfax, Washington Territory, 89 miles eastward from the main line at Palouse Junction. This branch passed through a section of eastern Washington, which was growing rapidly in population. In 1886, the Cascade Division, extending from Pasco Junction to Ellensburg, a distance of 130 miles, was completed, and in 1887, 95 miles of road⁶⁰ were built in Dakota extending from Grand Forks to Pembina.

In 1880 the average number of miles it operated was 722, and in 1886 it was 2,718. In 1889, it had 2,170.4 miles of main line and 1,091.1 miles of leased lines in operation.

59. American Railroad Journal, 1883, p.51.

60. Railroad Age Gazette, 1887, p.725.

The Southern Pacific during these years practically completed a line of railroad from San Francisco to New Orleans. The line between these two points--the waters of the Pacific and the Gulf of Mexico, was designated by eastern men as the "Sunset route". The entire length from San Francisco to New Orleans was 2,470 miles. The length within the boundaries of Arizona was over 400 miles. Since the building of the road, many towns and mining camps had sprung up in the country adjacent; an army of traders and speculators had filled the southern counties and the steadily increasing volume of bullion which was finding its way out of the country, was suggestive of the response other portions of the territory would give to rail communication. Therefore, the completion of the Southern Pacific Railroad across Arizona marked a new era in the history of the territory. Since the construction of the Southern Pacific was so important to the economic development of Arizona, it would be equally advantageous to the other territories which it traversed.

In 1885, a consolidation of the southern Pacific with its controlled lines and extensions east of El Paso was completed. The consolidated line was composed of the following roads: The Southern Pacific of California; Southern Pacific of Arizona; Southern Pacific of New Mexico; Galveston, Harrisburg and San Antonio; Louisiana, Western Texas and New Orleans; and Morgan's Louisiana

and Texas Railway and Steamship lines. The lines were consolidated under the name Southern Pacific Company, with headquarters at San Francisco, California. It was divided into two divisions; all west of El Paso would be known as the Pacific System, and all east thereof as the Atlantic System. At the end of 1886 the mileage of its Pacific System had climbed to 3,138.98, and its Atlantic System to 1,607.55, a total of 4,846.⁶²53. In March, 1889, the reported length of its lines was 4,976.23.

The Union Pacific expanded its system during the ninth decade partly by purchases or consolidations, and partly by constructing. The average length of lines operated by its system was 2,706.30 in 1880 and 4,518.13 in 1886. The reported mileage of its system in May, 1889, was 5,134.3 miles, subdivided as follows: Nebraska division, 8,933; Wyoming division, 687.2; Kansas division, 1,019.4; Salt Lake and Western, 57.2; ⁿMotana Union, 61; Utah Central 285.5; Utah and Nevada, 37.

62. Ringwalt, Development of Transportation System in the United States, p.357.

CHAPTER III

Consolidation of Railways

(A) Causes of Consolidation

One of the causes of railway consolidation was seen through out the whole business world. Railway corporations, like other industrial concerns, found that where the large and strong organization supplanted the small one, greater business might be expected, expenses reduced, and profits increased.¹ In compliance with this economic principle, railway companies have striven for wide expansion. Within limits of efficient control the larger they are and the wider their territory, the safer and more reliable is their business.

The second cause of railway consolidation was the abolition of excessive competition. Competition led to most of the evils that befell American railways. It caused constant rate wars. There were too many railroads, too many hostile interests; and it is quite natural that reduction of their number was attempted. Whenever one company begins underbidding another in the matter of rates, competition is extremely ruthless, and the consequences are disastrous to both parties. If the competition among them is to be restrained, they must either co-operate or consolidate. If they cannot agree upon, and work in accordance with business methods that will effectually restrain the forces which lead to reckless competition, they

1. Johnson and Van Metre, Principles of Railroad Transportation, p. 316.

must consolidate under a single ownership. There is no other alternative. The most notable instance of this sort was the consolidation of the Galena and Chicago, and the Chicago and Milwaukee, in the Chicago and Northwestern in 1865². The fundamental purpose of this consolidation was the elimination of competition. The New Jersey Railroad, operating between Jersey City and New Brunswick, was in competition with the Camden and Amboy. For the purpose of eliminating competition, the Jersey Railroad was taken over in 1867 as a constituent in the United Railroads of New Jersey³.

The true cause of railway consolidation was the thirst after power, which characterizes most railway managers. In order to secure business, war was not only conducted openly by means of competition, but it was also carried on secretly; and railroad managers schemed one against the other with the object of obtaining power. Every railroad manager was permeated with a desire to make his system great, to oust his rivals; and this desire prompted his every action. Consequently railroad presidents were always attacking others and defending themselves. There was a constant struggle not only for life, but also for supremacy. An instance of this kind was found in the Gould's combination for the control of trans-continental lines. In 1879, before this consolidation, Gould controlled only the Union Pacific. Subsequently he practically owned over twenty western lines. He held in his hands the destinies of

2. Robinson, M. H. The Holding Corporation, pp. 15-16.

3. Cleveland and Powell, Railroad Finance, p. 289.

the Union Pacific, Kansas Pacific, Wabash, St. Louis, Kansas City and Northern, Missouri Pacific, St. Joseph and Denver, Colorado Central, Utah Southern, St. Louis and San Francisco Co., Paris and Danville, Peoria, Pekin and Jacksonville, Chicago and Paducah, Chicago and Strawn, Denver and South Park, Denver and Rio Grande, Hannibal and St. Joseph, Denver Pacific, Detroit and Eel River, and others of minor importance. The primary cause of this combination was evident. It was the decision to crush out all competition against the Union Pacific, and to prevent the construction of other lines to the Pacific Coast not controlled by himself. His tactics were directed principally against the Boston syndicate which controlled the Chicago, Burlington and Quincy, Burlington and Missouri River in Nebraska, and Atchison, Topeka and Santa Fe, and which was pushing the latter rapidly to the Pacific Coast. The assumption of control of the Denver and Rio Grande was to prevent the Atchison, Topeka and Santa Fe from entering Leadville and other important Colorado mining points. Furthermore, Gould permitted Vanderbilt to gobble up the Erie and obtain control of the Canadian lines and in return Vanderbilt aided Gould in getting control of all the western roads east of California and the Pacific Coast. Gould would give his business in the East to Vanderbilt, and Vanderbilt was to give the western to Gould. Such was the method of a railroad manager in ousting a rival.

The final cause of railroad consolidation was the law enactment of 1866. After the difficulty experienced by the federal government in obtaining continuous transportation of troops and military supplies, Congress had passed a law which granted to every railroad the right to carry persons and any property from any state into another state, "and to connect with roads of other states so as to form continuous lines.....to the place of destination" unham-⁵pered by state laws. This law had an undoubted influence in ushering in the period of trunk line development. The immediate cause was the increasing rivalry for through traffic between the Pennsyl-⁶vania, the Erie, and the New York Central. In 1869, therefore, the Columbus, Chicago and Indiana Central was leased by the Pittsburgh, Cincinnati and St. Louis in the interest of the Pennsylvania, which thereby gained control of a through line to St. Louis and Chicago. In 1872 a second route to St. Louis was acquired through the lease of the St. Louis, Vandalia, and Terre Haute by the Terre Haute and Indianapolis, in which the Pennsylvania had a half interest. In 1869, also, Cornelius Vanderbilt united the several lines connecting Buffalo with Chicago in the Lake Shore and Michigan Southern Railroad, and consolidated the New York Central with the Hudson River Railroad, thus establishing a through route from New York to Chicago. The Erie, between 1868 and 1874, took over the Atlantic and Great Western under various leases, thus extending its control as far west as Dayton, but it did not get an independent entrance

5. Statute at Large XIV, p.66.

6. Cleveland and Rowell, Railroad Finance, p.276.

into Chicago until 1883 when the Chicago and Atlantic was opened.⁷ While the movement had been inaugurated with a view to facilitating transportation, the system thus created soon found a much stronger motive to consolidation in the suppression of competition. The consolidation of competing railroads, whether parallel or otherwise, had gone on very rapidly. The New York, New Haven and Hartford may be cited as a system which has been built up through⁸ the consolidation of lines many of which were natural competitors. The New York Central in 1885 found it necessary to get control of the West Shore as it was a direct competitor of the system; and for the same reason, the Lake Shore, in 1887 took over the New York, Chicago, and St. Louis, which paralleled its line throughout its entire length.

(B) Examples of Varieties of Consolidation

The consolidations have been brought about by various ways. The most common form is the merger, or the absorption of one or more corporations by another which retains its corporate existence unchanged save through modifications ordered in the enabling act. The typical example of this kind was the taking-over in 1885, by the Galena and Chicago Union of the Mississippi and Rock River Junction Railroad. The shares of these two companies⁹ were blended into one capital stock in the name of the Chicago and Galena Union. Another instance which may be cited is in 1880

7. Cleveland and Powell, Railroad Finance, p.277.

8. Ibid., p.277

9. Ibid., p.291.

the Kansas Pacific and the Denver Pacific were merged in the Union Pacific.

Another form of railroad consolidation was share-ownership. A railroad company may hold shares of another company either for purposes of investment or to secure control of subsidiary properties. Shares for control may be obtained in various ways. They may be purchased upon the market or directly from individual share-holders, or they may be taken over in accordance with a formal agreement providing for the exchange of securities. Through the purchase of the shares of the Alton and St. Louis, the Chicago and Alton finally¹⁰ in 1867 gained full control of that company. In 1881 a contest for the control of Philadelphia, Wilmington, and Baltimore was engaged between the Baltimore and Ohio, and the Pennsylvania, but the contest, at last, was won by the Pennsylvania at a cost of about sixteen millions in cash. Part of this sum was subsequently made up by means of a bond issue, and part through the sale of new shares. When control is acquired by means of an exchange of shares,¹¹ an increase of capitalization is necessary.

Acquisition of control is simplified in cases where a large block of shares may be purchased from a single holder. The Richmond and Danville acquired control of the Northwestern of Georgia in 1881 through a purchase of the majority interest held by the city of Athens. In 1883, the Chicago, Burlington and Quincy obtained from

10. Cleveland and Powell, Railroad Finance, p.293.

11. Ibid., p.299.

Jay Gould a controlling interest in the Hannibal and St. Joseph; and in 1889 a syndicate representing the Cleveland, Cincinnati, Chicago and St. Louis purchased control of the Chesapeake, and Ohio from Collis P. Huntington.¹²

Owing to the popular opposition to actual consolidation, which has been active in such states as Texas and Minnesota, consolidation has taken place by means of lease. The period for which a lease may run varies. The term may be for only a few years; it may extend to the end of the corporate existence of the lessee; or it may be specifically without limit as to time. Some leases stipulate that a fixed annual rental shall be paid, and others fix a progressive rental, or make it proportionate to either gross or net earnings of the leased line. An instance of this kind was the lease of the Jeffersonville and Indianapolis Railroad including the Madison Branch by the Pennsylvania Railroad Company in 1871;¹³ and in 1879, by means of lease, the Indianapolis and Vincennes Railroad¹⁴ was brought under the control of the Pennsylvania Railroad Company. Some lines, such as the Philadelphia and Erie, the Harrisburg and Lancaster, were leased by the Pennsylvania Railroad Company with a term of 999 years.¹⁵

It is undeniable that long term leases are frequently succeeded by mergers; the lessee thereby surrenders its corporate identity, as in the case of the merger of the Beloit and Madison

12. Cleveland and Powell, Railroad Finance, p.298.

13. American Railroad Journal, 1871, p.818.

14. Ibid., 1879, p.25.

15. Cleveland and Powell, Railroad Finance, p.300.

by the Chicago and Northwestern in 1871. In 1879 the Chicago, Milwaukee, and St. Paul came into possession of the entire share capital of the Western Union Railroad, in which it had owned a majority interest for ten years. Under the laws of Illinois it was unable to take over the property by direct conveyance, it executed a lease for a nominal consideration for a term of 999 years.¹⁶

(C) Results

By the process of consolidation, the principal results have been economy and a decrease of hostilities. It was apparent that consolidation would effect great savings to railways. How different matters would be if a large number of small companies continued to lead separate corporate existences instead of being united into one homogeneous system. Could economy be effected? In the matter of consolidation, instead of scores of main offices with a corresponding number of sets of officials there is but one larger, it is true than any of the small companies would require, but considerably cheaper than the total that would have been required by numerous smaller companies. Furthermore, there must be an important saving in the purchase of supplies; they are bought in large quantities, and the large company can have its own coal mines, its own workshops, and its own locomotive works, while it can maintain permanent staffs of laborers and employees. All of this is impossible for small companies.

16. Cleveland and Powell, Railroad Finance, p.316.

In the second place consolidation produces harmony. Rate war between great systems is not a trifling matter. Hostilities between the two great systems known as the Pennsylvania and Vanderbilt lines naturally are far less frequent than they were in the days when over a hundred small lines occupied the places of the present two.¹⁷

Consolidation, like every form of combination, by excluding competition, prevents discriminations. The elimination of the power to compete eliminates the inducement to discriminate. When a railroad controls all the traffic, there is no necessity for granting rebates or preferential rates to the shippers. Consolidation, therefore, tends to make rates just and reasonable.

Greater facility in the working of railroads is also one of the results of consolidation. Formerly many a small railroad had either too much rolling stock or not enough, and the result as a rule was extravagant expenditure. As in matter of consolidation, the condition is defferent. On a large railroad system business varies according to seasons, divisions and periods; but staff and rolling stock can always be profitably employed somewhere and the strain sometimes placed upon special parts can be relieved without extra expense or loss of business. Thus a waste of energy is prevented, a better service maintained, and great savings are the result.

17. Johnson and Van Metre, Principles of Railroad Transportation, p.176.

CHAPTER IV

Railroad Capital

(A) Expansion of Capital and Methods of Financing

The mileage of the railroad system of the United States at the end of 1870 was 5,000; the permanent investment was estimated at less than \$275,000,000, though it must be admitted that a considerable portion of this was foreign capital.¹ The expansion of the railroad system during the eighth decade was 87,801.42 miles; the reported cost of the permanent investment of this property was \$5,425,722,559.64 which was represented by \$2,613,606,264.45 of capital stock, \$2,390,915,401.63 of funded debt, and \$421,200,893.56² of unfunded debt. The increased mileage during the first five years of the ninth decade was 40,759 miles, while the capital investment increased to \$2,804,381,537, this increase consisting of an increase of 57.1 per cent in capital stock, 58.2 per cent in funded debt, and 56 per cent in other forms of indebtedness. In the five years ending with 1890 railroad mileage increased 39,670 miles, the capital investment increased \$2,446,236,846, this increase in investment consisted of an increase of 19.5 per cent in capital stock, 31.6 per cent in funded debt, and 46.1 per cent in other forms of indebtedness.

1. Railroad Gazette, 1872, p.375.

2. Ringwalt, Development of Transportation System in the United States, p.241.

The following statement shows the increase in share capital, funded debt and unfunded debt of the railroads of United States from 1880-1890.³

Year	Capital stock.	Stock Increase.	Per-cent.	Funded debt.	Funded debt Increase.	Per-cent.
	\$	\$		\$	\$	
1880	2,708,373,375	313,026,082	11.50	2,580,874,943	211,365,771	3.35
1881	3,177,375,179	468,701,804	14.70	2,872,423,606	347,548,663	12.10
1882	3,511,035,324	333,660,645	9.50	3,235,542,823	357,119,717	11.10
1883	3,708,030,583	197,024,759	5.30	3,500,379,914	265,336,591	7.60
1884	3,762,616,686	54,556,103	1.45	3,669,115,772	168,235,858	4.60
1885	3,817,697,832	55,081,146	1.44	3,765,727,066	96,611,294	2.60
1886	3,999,508,508	131,310,676	4.50	3,862,966,880	117,239,264	3.00
1887	4,191,562,029	192,053,521	4.60	4,186,943,116	308,976,786	7.30
1888	4,438,411,342	246,849,313	5.60	4,624,035,023	437,091,907	9.50
1889	4,495,099,318	566,879,976	13.00	4,828,265,771	204,330,748	4.20
1890	4,640,239,572	145,140,260	3.10	5,105,902,035	277,536,254	5.40

Year	Unfunded debt.	Unfunded debt Increase.	Per-cent.	Total Increase.	Per-cent.
	\$	\$		\$	
1880	162,489,939	5,608,887	35.00	530,020,740	9.80
1881	222,766,267	60,276,328	27.00	876,526,795	13.99
1882	270,170,972	47,404,695	17.50	738,185,057	10.50
1883	268,925,285	1,245,677	0.46	461,115,673	6.16
1884	244,666,596	24,258,649	9.90	198,533,272	2.55
1885	259,108,281	14,441,685	5.60	166,134,125	2.12
1886	280,673,814	21,565,533	7.70	320,615,473	3.93
1887	294,682,071	14,008,257	4.75	510,038,564	5.88
1888	306,952,589	12,270,578	4.00	606,211,738	6.48
1889	357,477,160	50,524,571	14.00	311,543,295	3.21
1890	376,494,297	19,017,137	5.05	441,693,651	4.36

3. Poor's Manual of Railroads, 1890, pp. 12-13.

The means for the construction of the railroads of the United States were originally supplied from sales of, or subscriptions to, their shares and bonds, in pretty equal proportions. The capital stock of American railroads are of two general classes, Preferred stock and Common stock. Preferred stock is issued to secure additional capital when the original shareholders are unable to furnish the full amount of capital necessary to complete the work of construction and equipment. It offers a special inducement to investors. Although there is no limit to the variety of preferences which may be offered, there may be said to be three general classes, (1) preferment as to dividend; (2) preferment as to return of capital upon dissolution; and (3) preferment as to voting power at shareholder's meetings. To any or all of these classes of shares there may be granted in addition, certain privileges as to the conversion of shares into bonds, or as to the subscription to additional issues of shares or convertible bonds at lower prices than are available to outsiders.

Common stocks constitute by far the largest part of railroad capital of American railroad companies. Holders of common stock are the "residual claimants" to the surplus income of the corporation. Having no claim to a stipulated return, they receive dividends only after all interest charges and dividends on preferred stocks have been met.⁴

Besides capital stocks, various classes of bonds are issued

4. Cleveland and Powell, Railroad Finance, p.40.

5. Sakolski, A. M., American Railroad Economics, p.29.

by railroad companies to secure capital. They are the mortgage bonds, collateral trust bonds, convertible bonds, debenture bonds and income bonds. The mortgage bond is an obligation secured by a lien on some specific and tangible property. It usually bears a fixed rate of interest and matures after a definite period. The mortgage bonds are variously named as Prior Lien, First Mortgage, Second Mortgage, Third Mortgage etc. The difference between a first mortgage and second mortgage is readily understood. The investors may be misled through the names of bond issues, Thus the Toledo, St. Louis and Western Railroad had a 3.5 per cent Prior Lien Bond issue of \$9,500,000 and a 4 per cent First Mortgage Bond issue of \$6,500,000. The latter, however, constitutes an inferior mortgage on the property securing the Prior Lien Bonds.

Collateral Trust Bonds differ in one essential particular from mortgage bonds. It is a mortgage secured, not by any real property or franchise but by the deposit of stocks or bonds of other companies with a designated trustee. The investment value of collateral trust bonds depends, first, upon the intrinsic value of the pledged securities, and secondly, upon the general credit and financial standing of the company pledging the security.⁷ In case the bondholder fails to receive his interest and principle, the trustee is authorized to sell the securities pledged. The first use of the collateral trust bond was by the Union Pacific, the proceeds of

6. Sakolski, A. M., American Railroad Economics, p.35.

7. Ibid., p.39.

8

which were used to construct branch lines or extensions.

Convertible bonds are similar to other railroad bonds. They are a direct obligation of the issuing company maturing in a certain period of time and bearing a fixed rate of interest. The holders, in addition, have the privilege of exchanging them for a class of capital stock of the issuing company under prescribed conditions and terms.

Debenture bonds issued by railroad companies are without specific property pledged for their securitiesⁱ. The issuance of these bonds is to depend upon the faith and general credit of the company. Because of no definite pledge of property, debenture bonds are issued and sold mainly by the richest and strongest of the railroad companies.

Income bonds are generally known as "adjustment" bonds, from the fact that they are generally created at reorganizations in which a financial adjustment is accomplished by reduction in fixed charges. Holders of second or junior lien bonds may then be permitted to exchange their holdings for income bonds. Unlike other classes of bonds, income bonds are based on the earnings of a corporation. They have preference over stock, but the interest does not have to be paid if it is not earned. These bonds, therefore, as a claimant of profits are in much the same way as preferred stocks.

(B) Relation to Costs

In an early portion of 1866 the American Railroad Journal published the following estimate of the mileage and cost of the

railways of the United States shortly after the close of the war. The total mileage at that period including projected or partly finished lines was 51,284.87; completed lines, 35,316.40; the total cost of road was \$1,388,555,268 and the average cost per mile was \$38,998.⁹ By the end of 1869 the mileage operated in the United States had increased to 43,510.43 and the total cost of the railroads was estimated at about \$2,212,412,719, and the average cost per mile, \$45,998.90. The total length of the railroads in the United States at the end of 1880 was 92,147 miles. The aggregate cost of these roads was \$5,402,037,257, and the average cost per mile was \$59,709.35.¹⁰

The total length of the railroads in the United States, in 1890, was reported 163,420 miles against 92,149 miles in 1880, 43,510.43 miles for 1869, and 35,316.49 for 1866. The cost of the railroads of the country would average \$61,942.45 to the mile, the total for the 163,420 miles, being in round numbers, \$10,122,639,500. The increase of the year over that for 1880 was \$4,720,598,643, while that of 1880 over 1870 was \$3,189,624,438; of the total cost \$4,640,239,578 was made up of share capital, and \$5,105,902,025 of funded debt and \$376,494,297 of other debt. The average cost per mile of all the roads was \$61,942.45 against \$59,709.¹¹35 per mile in 1880, \$45,980.90 for 1869 and \$38,998 for 1866.

11. Poor's Manual of Railroads, 1891, p31.

The table shows the length of lines owned, share capital funded and other debts, and the average cost per mile from 1871-1890.¹²

Year	Length of lines owned. Miles	Capital stock. \$	Funded debt. \$	Other Debt 13 \$	Average cost per mile. \$
1871	51,445	2,664,627,645	1,113,915,339		59,726
1872	57,323	1,647,844,113	1,511,578,944		55,116
1873	70,361	1,947,638,584	1,836,904,450		57,134
1874	72,623	1,990,997,486	2,230,766,108		60,425
1875	74,096	2,198,601,281	2,459,607,349		62,752
1876	76,305	2,248,358,375	2,165,141,368	55,092,192	53,558
1877	79,208	2,313,278,598	2,255,518,650	237,604,774	59,045
1878	80,832	2,292,257,877	2,297,790,916	182,284,556	56,548
1879	84,393	2,395,647,293	2,319,489,472	156,881,052	57,730
1880	92,147	2,708,673,375	2,530,874,943	162,489,939	58,949
1881	103,593	3,177,375,179	2,878,423,606	222,766,267	57,730
1882	114,461	3,511,035,824	3,235,543,323	270,170,962	61,342
1883	120,552	3,708,060,583	3,500,879,914	268,925,285	61,800
1884	125,152	3,762,616,686	3,669,115,772	244,665,596	61,400
1885	127,729	3,817,697,832	3,765,727,066	259,108,281	62,584
1886	133,606	3,999,508,508	3,882,866,330	280,673,814	61,099
1887	147,999	4,191,562,029	4,186,943,116	294,682,071	58,603
1888	154,276	4,438,411,342	4,624,035,023	306,952,589	60,782
1889	160,544	4,495,099,318	4,828,365,771	357,477,160	60,309
1890	163,420	4,640,239,578	5,105,902,025	276,494,297	61,942

12. Poor's Manual of Railroads, 1889, 1891, pp. 4-5.

13. No data can be obtained for the item on "other debt" beginning from 1871-1875.

(C) Return to Capital

The earnings of the railroads of the state of Massachusetts in 1867, were \$12,927 per mile, those of New York \$15,000 per mile and those of Pennsylvania, \$12,600 per mile. The earnings of the leading railroads in the West were estimated at \$10,000 to \$16,000 per mile. The Pittsburg, Fort Wayne and Chicago earned at the close of the fiscal year, \$15,464 per mile; the Chicago, Burlington and Quincy, \$15,218; the Cleveland, Painesville and Ashtabula, \$19,247; the Michigan Central, \$15,000 and the Chicago and Alton, \$14,000. It was, therefore safe to estimate the earnings of the railroads of the Eastern, Middle, Western and Pacific States at \$10,000 per mile, which, for the 29,146 miles in operation, would give a total of \$291,460,000. The earnings of the railroads in the Southern States were estimated at \$5,000 per mile, for 10,000 miles of road, or a total of \$50,000,000. The aggregate earning for the whole country, consequently, would be about \$340,000,000,

The ratio of gross earnings to cost for the whole country was equal to about 21 per cent; for the northern states, 23 per cent. The cost of the railroads of Massachusetts was \$64,983,771. Their earnings were \$18,279,102, a sum equalling 28.13 per cent of their cost. The earnings of the railroads of New York were \$50,000,000 upon a cost of \$170,000,000 or 29 per cent. Those of the Pennsylvania railroads were \$52,000,000, on a cost of \$222,000,000 or 23.7 per cent.

the earnings of the railroads of the eastern states, in 1871, including New England, New York, New Jersey, Pennsylvania, Delaware and Maryland, covering a mileage of 17,278 miles, were \$11,500 to the mile, or an aggregate of \$197,697,000; of the western states, having a mileage of 28,388 miles, \$6,500 to the mile, or an aggregate of \$184,522,000; of the southern states, having a mileage of 13,421 miles, \$4,500 to the mile or an aggregate of \$60,394,500; of the states on the Pacific slope, having a mileage of 1,765 miles, \$7,000 to the mile, or an aggregate of \$12,355,000. The total earnings for the whole country were \$454,969,000; the earnings, per mile, for the whole were \$7,500. Of the earnings, about two thirds were received for transportation of freight and one third for the transportation of passengers.¹⁴

The earnings of the railroads in the United States in actual operation in 1861 were \$130,000,000; and in 1871, \$454,969,000. The total increase from 1861 to 1871 was about \$320,000,000, or \$32,000,000 annually.

In 1880 the total capital investment of the railroads of the United States, measured by the amounts of their share capital, funded and unfunded debts, was \$5,108,241,906. Their gross earnings in that year equalled \$615,401,931, or 12.4 per cent on capital investment, while net earnings amounted to \$255,193,437, being 4.9 per cent on capital invested.

14. Poor's Manual of Railroads, 1872-1873, p.28.

In 1885 the total capital investment of the railroads of the United States measured by the amounts of their share capital, funded and unfunded debts, was \$7,852,535,179. Their gross earnings in that year equalled \$772,568,833 or 9.9 per cent on capital invested, while net earnings amounted to \$269,493,931 being 3.4 per cent on capital invested. In 1890 the total investment was \$10,122,635,900, gross earnings were \$1,097,847,428, equal to 10.8 per cent on investment, and net earnings \$346,921,318, or 3.4 per cent on capital.¹⁵

The following statement shows the length of lines operated, gross and net earnings, and interest and dividend paid by all the railroad companies of the United States from 1871-1890.¹⁶

Year	Length of line oper- ated Miles	Gross traffic earnings \$	Net traffic earnings \$	Interest paid \$	Per- cent 17	Dividend paid \$	Per- cent
1871	44614	403329208	141746404			56456681	39.80
1872	57323	465241055	165754393			64418157	38.80
1873	66237	526419935	183810562			67120709	36.60
1874	69273	520466016	189570958			67042942	35.40
1875	71759	503065505	185506438			74294208	39.50
1876	73508	497257959	186452752	93559573	18.85	68039668	36.58
1877	74112	472909272	170976697	98820927	20.80	58556312	34.38
1878	78960	490103351	187575167	103160512	21.04	53629368	28.60
1879	79009	525620577	216544999	112227515	21.14	61681478	28.50
1880	82146	613737610	255557555	107866328	17.45	77115371	30.20
1881	92971	701780982	272406789	128587302	18.29	93344190	34.20
1882	104971	770209899	280316696	154225380	20.00	102031434	36.40
1883	110414	829772924	293367285	173139064	20.85	102052548	34.80
1884	115672	770684908	268064496	176694302	22.85	93244835	34.80
1885	123320	772568833	269493931	187426035	24.20	77672105	28.80
1886	125135	829940836	300603564	189036304	22.35	81654138	27.20
1887	137028	940150702	334989119	203790352	21.60	91573458	29.40
1888	145387	960256270	301631051	207124288	21.60	80243041	26.60
1889	152745	1003736596	322284986	219877150	21.88	81264029	25.25
1890	158037	1097847428	346921318	229101144	21.00	83863632	24.2

16. Poor's Manual of Railroads, 1889, 1891, pp.4-5

17. No data can be obtained for "interest" item beginning from 1871-1875.

CHAPTER V

Development of Railways System and its Relation
to the General Economic Growth of the Country

One of the characteristic features of the economic growth of countries is easy communication and cheap transportation. From the very beginning, the prosperity of a nation has been measured by the extent to which it has enjoyed the means of travel and intercourse. In nearly every part of the world economic progress has sprung up first along the seacoast and has been gradually extended to the interior. For lack of cheap transportation and easy communication, the economic progress in the interior has been very slow.

The coming of the locomotive opened a new era of economic prosperity. Advancement in wealth has been more rapid within the last hundred years than in any period of economic history. Commodities can be widely distributed and markets are open to every one. Industries become national and commerce international.

There was never a railroad built in this country, said Poor, where the people along its line did not make ten dollars out of it, where its owners made one. In the first place, they get their products transported for one dollar, where, before the railroad was opened, they paid twenty. They get their products moved by rail as far in one hour as they used to move them by horses in twenty-four hours. Therefore there can be small econo-

mic progress in any district without good roads, a phrase which, at this day, means railways. The mining, manufacturing, and mechanical developments, which form the vital essence of modern life, could not exist in the absence of the iron rails of the present day.

The railroads of this country have an importance in the economic development of its people possessed by those of no other nation. They are, in fact, the markets to every portion of it. Wheat, which will bear transportation 2,500 miles over railroads, will not bear transportation for more than one-tenth that distance over ordinary highways. Wherever railroads are constructed, they give immediately a high commercial value to the products of labor. The value and the influence they so generally exert is well illustrated by the following statement.²

In 1860, there were 30.626 miles of railroad in the United States. At \$4,000 per mile of line, their earnings were \$153,175,000 or \$4.90 per head. In 1870, there were 50,000 miles in operation, the earnings of which, at \$9,000 per mile, were \$450, 000,000 or \$11.75 per head. In 1880, there were 93,000 miles in operation, the earnings of which, at 6,600 per mile, equalled \$613,800,000 or \$12.50 per head. In 1890, there were 163,000 miles in operation, the earnings of which, at \$6,500 per mile, equalled \$1,059,500,000 or \$13.75 per head. Such an increase of earnings measures accurately the increase of the wealth and commerce of the country due to development of the railroad systems. In other words, without them the commerce and

2. Poor's Manual of Railroads, 1870-71, p.35; 1880-81, p.39.

wealth of the country could have had no existence.

Due to the development of railroad systems in this country, various forms of western agriculture were practically revolutionized. It became possible to cultivate with profit a large amount of wild and tenantless land that could not before be utilized.

The most remarkable gains were on the Pacific Coast, and the western, northwestern, and southwestern states. Various causes helped to create this wonderful increase of wealth, and in some localities it was only due in a slight degree to railway construction. But in many other sections the new railways were leading causes of the great advance.

A positive advantage which all departments of agriculture have derived from the development of railway systems lies in the giving to the farmer the benefit of the best markets and the highest prices. We have already shown that this increased production, or rather its surplus, could not have been carried to market without the aid of railroads, more than two-thirds of the whole being carried off by that means. Let us now reverse this statement. We find, on the other hand, that railroads have stimulated and increased production.

The influence of railroads on agriculture is most obvious in the western and northwestern states. The following table, taken from the United States census, shows the rapidity with which the farming interest has been progressing:

3. Ringwalt, Development of Transportation System in the United States, p.261.

	1870	1880
Total land in farms, acres	407,735,041	536,091,835
Improved land, acres	188,921,999	284,771,042
Total number farms	2,659,985	4,008,907
Farms under 100 acres	2,075,338	2,208,374
One hundred to 500 acres	565,054	1,695,983
Five hundred to 1000 acres	15,873	75,972
One thousand acres and over	3,720	28,578

Comparison of the product of some leading staples shows the following:

	1870	1880
Wheat	287,745,626	459,483,137
Corn	760,944,549	1,754,591,676
Hay, tons	27,316,048	35,205,712
Tobacco, pounds	262,735,341	472,061,157
Butter, pounds	514,092,683	777,250,287
Cheese, pounds	27,772,489	53,492,153

If the effect on the western and northwestern states has been correctly stated, it is true also of those states which are not included here.

There is another respect in which the influence of the development of railroad systems is favorable to agriculture. The influence on the value of farming lands is too striking not to have been noticed by all observant persons. We have, moreover, some remarkable instances of the specific effect of certain railroads. We have, for example, the immediate effect produced on the lands of Illinois by the Illinois Central Railroad. That company received from the government a large amount of land at the time when the government could not sell it at a dollar and a quarter per acre. Since then the company has constructed its road and sold a large part of those lands at an average of eleven dollars per acre. Not-

withstanding the rapid growth of population, the large part of this advance is due to railroads.

If the effect of the railroad system has been so great on the western states, it is still greater in those states which lie beyond the Mississippi. They are still further from market, and will be enriched in a large ratio by the facilities of transportation. Indeed, railroads are the only means by which the distant parts of this country could have been commercially united, and thus the railroad has become a mighty means of wealth, unity, and stability.

For the creation of what is known as the factory system, with its teeming industrial populations aggregated into busy urban centers, the railways are certainly far more responsible than the earlier modes of transport. Suffice it to say that as soon the railways had allowed great quantities of raw material to be conveyed, at especially low rates, to particular districts; machinery to be set up, also at lower cost than before; labor from the rural districts to be brought in and concentrated in the same localities, and the making of an efficient and less costly distribution of commodities produced on a large scale under the economical conditions--it was inevitable that factories should supplant home industries, that manufacturers should succeed small masters, and that great towns should grow up in proportion as rural centers declined.

The towns and the industrial centers expanded farther as rail transport afforded increased facilities for the conveyance of raw materials to works which could be set up in any part of the

country, regardless of the once indispensable water power; and the procuring of these raw materials not only greatly expanded national wealth but led to the opening up to industrial activity of many a district previously isolated and undeveloped.

All things considered, railroads are the cheapest workers of the country, and if the theory favored by all influential schools of political economists that transportation is one of the most important elements of production, is correct, they are, substantially, leading producers of all classes of bulky mining, manufacturing and agricultural staples.

CHAPTER VI

Railroad Rates

(A) Movement of Rates

In order to trace the movement of rates through a series of years, it was necessary to do something more than merely compile a mass of figures. Differences in the nature of the traffic, and in the conditions under which it is moved, make averages unreliable. Yet changes in average rates indicate to some extent the movement of actual rates. Examining together the movement of average rates, and of some particular rates, we may approximate the general course taken by actual changes.

During the quarter of a century following the close of the Civil War there was a marked downward movement in freight rates in this country. The decline of freight rates was far more than passenger fares.¹ Now let us treat all the railroads in the United States as one system. Freight rates on the average per ton per mile were, in 1867, 1.92 cents; in 1870, 1.88 cents; in 1880, 1.23 cents and in 1890, 0.94 cents.² These figures show that the average freight rate in this country in the period from 1867 to 1890 declined fifty per cent. Traffic in this period, has not remained of the same nature, so the accuracy of the conclusion drawn from these figures is also weakened. The average earnings per ton per

1. Ripley, W. Z., Railroad Rates and Regulation, p.429.

2. Noyes, W. C., American Railroad Rates, p.161.

mile are manifestly determined by the nature of the traffic as well as by the rate charged. Changes in receipts may result from changes in tariffs. Receipts per ton per mile may, of course, decline when rates decline. But they may decline likewise if rates remain unchanged. However, from our examination we noticed that there was a most marked decline in freight rates in this country from 1867 to 1890. The decline is graphically shown by a diagram on page 62.

Let us now see what results can be obtained by noting the movement of actual charges. New York and Chicago are the most important commercial centers in this country. The rates between these cities are not only of importance in themselves, but they form the basis for rates upon traffic moving between other points and in other directions. First let us notice the movement of rates upon classified traffic for a period of more than twenty years.

Rates on Classified Traffic from New York to Chicago
³
 from 1865-1888.

Date	Classes (Rates in cents per 100 pounds.)					
	1	2	3	4	5	6
1865-Oct.	215	180	90	82	"	"
1866-Mar.	188	160	127	82	"	"
1867-Nov.	202	170	138	86	"	"
1868-Sept.	188	160	127	82	"	"
-Dec.	202	170	138	86	"	"
1869-Aug.	25	25	25	25	25	"
-Nov.	150	130	100	80	55	"
1870-July	50	50	50	45	25	40
-Dec.	180	150	120	80	60	"
1871-June	100	90	70	55	45	"
-Dec.	125	30	30	30	24	"
1872-Aug.	75	70	60	54	35	"
-Oct.	125	110	85	65	50	"
1873-Apr.	100	90	75	60	45	"
1874-Jan.	100	90	75	60	45	"
1875-May	40	40	35	35	25	"
1876-Jan.	75	70	60	45	35	"
-July	15	15	15	10	10	"
1877-Mar.	75	75	60	45	35	"
1878-Feb.	75	60	50	40	"	"
1879-Aug.	45	32	26	19	"	"
1881-Nov.	60	50	40	28	"	"
1882-Jan	45	32	26	19	"	"
-Nov.	75	60	45	35	"	"
1883-June	75	60	45	35	25	"
1885-June	50	40	30	25	18	"
-Nov.	75	60	45	35	"	25
1887-Apr.	75	65	50	35	30	25
1888-Jan.	75	65	50	38.5	33	27.5
-Nov.	50	40	35	30	25	20

3. This table is abridged from Reports of Interstate Commerce
 Commission for 1902, Appendix-, Part 2.

Average Rates Per Ton-Mile, 1867-1890

1867

1870

1880

1890

Cents per Ton-Mile

0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0

This table is of interest not only as showing the course of rates, but also indicating the effect of rate wars and periods of depression. We can see clearly that it was due to lake competition, that rates in the summer months were, as a rule, lower than in the winter months. However this table is also somewhat unreliable as a comparison sheet because of changes in classification. Perhaps we shall obtain better results by comparing rates between the same points upon several important commodities.

Rates on different commodities from New York to Chicago,
⁴
 1867-1890.

Commodities (Rates in cents per 100 pounds.)
 Nails Beer

Date	Dry Goods	Tea	L.C.L.	C.L.	L.C.L.	C.L.
1867-Nov.	202	202	86	86	127	138
1868-Aug.	149	149	82	82	127	120
Oct.	70	70	50	50	127	55
1869-Feb.	45	45	45	45	45	45
July	188	188	82	82	127	127
Aug.	25	25	25	25	25	25
1870-July	50	50	45	45	50	50
1871-Sept.	30	30	30	30	30	30
Dec.	125	125	65	65	85	85
1872-Aug.	75	75	45	45	60	60
1873-Apr.	100	100	60	60	75	75
Aug.	27	27	18	18	18	18
1874-Jan.	100	100	60	60	75	75
1875-Jan.	100	100	60	60	75	75
1876-Jan.	75	75	45	45	60	60
July	15	15	10	10	15	15
1877-Oct.	100	100	45	45	45	45
1878-Feb.	75	75	40	40	40	40
1881-Aug.	45	45	19	19	19	19
1882-Jan.	45	45	19	19	19	19
Nov.	75	75	35	35	35	35
1883-June	75	75	35	35	35	35
1885-Jan.	50	50	25	25	25	25
Nov.	75	75	35	35	35	35
1886-Aug.	75	75	35	35	35	35
1887-Apr.	75	75	35	30	50	30
1888-Jan.	75	75	38.5	33	50	33
Nov.	50	50	30	25	35	25
Dec.	75	75	35	30	50	30

4. This table is abridged from Reports of Interstate Commerce Commission for 1902, Appendix G. Part 2.

5

Rates from New York, N.Y. to Chicago, Ill.

(In cents per 100 pounds.)

	L. C. L.		C. L.	
	Class	Rate	Class	Rate
Commodities	1886	1890	1886	1890
Acids, in iron drums, O.R.	3	4	4	5
Boots and shoes	1	1	1	1
Bags, cotton, grain, or salt, in bales	2	2	2	3
Canned fish, fruits, and vegetables	4	4	4	5
Coffee, in sacks	4	4	*	6
Drugs and medicines	1	1	1	1
Glass, window, 80 united in. and under	4	4	4	5
Groceries, N.O.S.	2	2	2	2
Hardware, N.O.S.	2	3	2	3
Leather	2	3	2	4
Machines, sewing, K.D.	2	2	2	4
Paint, in oil in barrels	4	4	4	5
Paper, newspaper, in rolls	2	3	4	5
Soap, common	4	4	4	5
Carpeting, N.O.S., O.R.C.	1	1	1	1
Blankets, N.O.S., in bales, O. R. C.	1	1	1	1
Brass, wire, nails, bolts, screws, and rivets	2	2	2	4
Chairs, K.D.	1	2	1	4

These tables show a decline in rates fully equal to that indicated by the movement of ton-mile receipts. Like the preceding one, these tables include only competitive rates.

5. Reports of Interstate Commerce Commission, 1890, P206. This table only shows the movement of rates for a short period, but it indicates a general reduction of rates on such commodities as cotton, salt, glass etc.

Here are tables showing the movement of local freight rates upon an eastern and a western railroad.

Local Freight Rates upon Pennsylvania Railroad, 1876-1890.							
Stations from	Year	Classes (Rates in cents per 100 pounds).					
New York to		1	2	3	4	5	6
Trenton, N.J.	1876	20	17	15	12	"	"
	1886	17	17	14	12	"	"
	1887	20	16	13	9	8	7
	1890	20	16	13	9	8	7
Harrisburg, Pa.	1876	45	30	25	20	"	"
	1886	35	30	23	17	"	"
	1887	33	28	22	17	15	12
	1890	33	28	22	17	15	12
Pittsburgh, Pa.	1876	45	30	25	29	"	"
	1886	43	35	26	20	"	"
	1887	45	39	30	21	18	15
	1890	45	39	30	21	18	15
Erie, Pa.,	1876	40	35	30	25	"	"
	1886	43	35	26	20	"	"
	1887	45	39	30	21	18	15
	1890	45	39	30	21	18	15

Local Freight Rates upon Chicago, Milwaukee and St. Paul Railroad, 1883-1890.

Distance Miles	Stations from Chicago to	Year	Classes (Rates in cents per 100 pounds.)									
			1	2	3	4	5	A	B	C	D	E
228	Marion, Ia.,	1883	70	55	45	35	28	33	28	25	20	"
		1887	60	50	37	25	20	25	20	16	13	11
		1890	55	45	32	22	16	20	16	13	12	10
309	Melborne, Ia.	1883	75	60	45	35	30	35	30	25	20	"
		1887	73	58	43	28	20	25	20	16	15	12
		1890	62	52	37	25	19	24	19	16	14	12
487	Council Bluffs, Ia.	1883	90	75	50	32	28	38	32	23	23	"
		1887	90	75	52	35	30	33	30	23	26	16
		1890	70	58	42	28	21	28	23	18	16	15

6. The first table was Joint Merchandise Classification before 1887; Official Classification after 1887. The second table was governed by "Western Classification".

These two tables indicate that local rates have declined less rapidly than competitive charges, and that decline in local rates have been more remarkable in the western than in the eastern states.

Now we can see that upon the basis of ton-mile receipts average rates declined fifty per cent from 1867 to 1890; that the particular competitive rates examined have declined to an equal extent; and that local rates have decreased to a limited extent. Without going further into details, we may draw a conclusion that rates on an average in 1890 were less than half what they were more than twenty years before.

(B) Development of Rate-making

When railroads were first projected in the United States, there was no definite basis upon which to establish their tariffs. Cost of maintenance and operation were of uncertain estimate and the economic relations of the transportation function were simple. Some of the state legislatures, at the time of granting charters, assumed that a railroad could furnish transportation at a lesser price than the wagons along the turnpike and, therefore, arbitrarily decided that the freight charge should be a greater or less proportion of that customary by wagon. In some parts of the country the wagon toll was 20 cents per cubic foot for articles light in weight, and \$1 per 100 pounds for articles heavy in weight, per 100 miles. The charter granted by South Carolina, in 1827, to the South Carolina Railroad, serves as a good example. The provisions as to the rates in the charter were that the frei-

ght charge should not exceed 10 cents per cubic foot for articles light in weight, and 50 cents per 100 pounds for articles heavy in weight, per 100 miles; this arbitrarily making the railway tolls one-half the wagon tolls.⁷

The practice of the wagoners to charge by the cubic foot for articles light in weight and by the 100 pounds for articles heavy in weight was followed by the railroads; but it quickly developed that it was not easy to assign certain articles to one or another of these broad classes. This difficulty was increased by the fact that the railroads brought about an increase not only in the volume but in the diversity of commodities offered for transportation; things differed, not only in bulk and weight, but in value, and the way in which they were packed. A more elaborate grouping was obviously necessary. The initial steps of this development, as it pertains to the railroads of the United States, are lost to record, but much progress was made within thirty years is manifest from a document issued by the South Carolina Railroad in 1855, copies of which are extant. At the top, four classes of articles are specified, the first including "hats, bonnets, saddles, furnitures, piano, tea, and other light articles," for which the charge was made per cubic foot, ranging from 4 cents for 7 miles to 10 cents for 136 miles. As pianos and furniture are not exactly light in weight, they are probably placed in the first class because of their high value.

7. Mcpherson, L.G., Railroad Freight Rates in relation to the Industry and Commerce of the United States, p.148.

The second class embraced "dry goods, shoes, glass, paint, glassware, drugs, raisins, figs, dates, spirits, turpentine, feathers, stoves, hollow ware, bows and shafts, pepper, spice, ginger." For these articles the charge was per 100 pounds, ranging from 25 cents for 25 miles to 50 cents for 136 miles. Here again, the inclusion of feathers and stoves in the same class implies that commercial as well as transportation conditions received consideration.

The third class included "butter, peas, lard, rope, tobacco, leather, dry hides, tin, copper, cast steel, machinery in boxes, coils of wire, carriage springs and axles, rice, soap, candles, oil wheat, lead, wool, dressed marble, mahogany bedsteads old furniture." The charge was applied per 100 pounds ranging from 18 cents for 25 miles to 40 cents for 136 miles.

The fourth class comprised "bacon, coffee, sugar, nails, spikes, ice, steel, pig and bar iron, grind and mill stones, coal, potash, iron railings, stone, hay, railroad wheels and axles, car springs, copper ore etc." Here again the charge was applied per 100 pounds, ranging from 15 cents for 25 miles to 39 cents for 136 miles.

The development of the classifications and rate adjustments outlined above is that which took place, generally speaking, between the building of the first railroads and the development of through traffic succeeding the Civil War. During the initial steps of this development, the practices of one railroad had no immediate

and direct effect upon those of another. Each railroad developed its own individual classification applicable to local traffic. With the growth of long distance traffic and of the need for through rates, through routes and through way-bills, an expansion of classification was needed. By 1886, in the East, there had come to be about 1,000 items. In the following year, the first Official Classification increased to 2,800 items. The same thing was true of the Western Classification. The number of commodities classified by name had increased to 1,658⁸ items. In 1890, the Official Classification included 5,747 items, and the Western, 3,859, and the Southern, 1,853⁹.

Making the classification is a part of making the charge, as we know from the very beginning of the railway enterprises. A classification by itself is of no use. Grouping commodities into different classes serves no purpose except to prepare a basis for the application of charges. Making the classification is merely the first step in rate making, and the second is the determination of what the charges per hundred weight shall be for each class of goods. Therefore, every company must prepare a large number of "Class tariffs and "commodity tariffs."

Class tariffs based upon classifications as distinguished from tariffs upon specific commodities, are of two kinds-Local and Joint. Local class tariffs are issued by an individual railway company for the rates upon the different classes of traffic between stations upon the same road. Joint class tariffs are issued by the

8. Ripley, W.Z., Railroad Rates and Regulations, p.309.

9. Dewsnap, E.R., Freight Classification, p.3.

agreement of two or more connecting lines and give the rates between stations upon different roads.

Commodity tariffs contain the charges upon specific commodities. They are entirely outside the classification, each railroad company reserves the right to give certain articles commodity rates which as a general rule apply to heavy or bulky commodities, such as grain, lumber, coal, iron, fertilizers, live stock, and oil.

Commodity rates are usually lower than would be the case under class rates. This is due to a variety of reasons. Competition with water routes may necessitate concessions in charges. This is especially so in the case of transcontinental traffic. Railroads desire to promote the interests of manufactures within their territory and commodity rates enable such manufactures to reach out into new markets. Commodity rates may also be granted to enable a new industry along the line of the railroad to establish itself in competition with established industries elsewhere.

Rates in this country are not, in form, upon a mileage basis. They are seldom so in fact. In making tariffs, the determining factors differ from those governing the making of classifications. The classifications govern the relation of charges; the tariff, the specific charge. Rate-making in this country has presented many difficult and complex problems. In the first place the country possesses a wide variety of geographic, social and economic conditions which have influenced materially the evolution

of rate structures. Secondly, the dissimilar conditions prevailing in the eastern, western trans-Mississippi and southern sections of the country have brought into existence in all of these sections peculiar rate systems, and lastly the effect of international competition on foreign trade has made the creation of a system of rates for export and import traffic different from the rates applying to domestic traffic.¹² In a word, owing to the physical and commercial conditions, different railroads within the same classification must make very different rates for similar services and prevent them from making the same charge for the same haulage.

The freight-rate system of the Trunk Line Territory demonstrates certain principles in railway economics. Here the traffic has been the most dense and at the same time the most diversified; and here competition, industrial and transportation, has been the keenest. It is in this territory, that the best thought has been directed to a solution of the problems of operation and traffic. A uniform classification and schedule of rates were formulated by the Joint Executive Committee, who, as early as 1879, began to enter this enormously difficult task.¹³ It was here that the application of a practical distance basis was completely made. The system was that railway charges should be proportioned to the length of haul. The rates on the east-and-west bound traffic of this territory are based on the rates of the shortest route between

12. Johnson and Van Metre, Principles of Railroad Transportation, p.354.

13. Raper, C.L., Railway Transportation, p.232.

New York and Chicago; and all the through rates have, with some comparatively slight exceptions, been percentages of this basal rate, the percentage being roughly the ratio which the distance between any two points in question bears to the distance between New York and Chicago.¹⁴

The structure of rate-making in the Southern Territory is known as the basing-point system. The origin of this system is due to certain natural features of southern territory. The first¹⁵ of these is its scattered and relatively thin settlement. Density of population varies between one-third and one-fourth of that in the northern states. This greatly limits the volume of local business. In the second place, agriculture, especially the cultivation of cotton, has been the absorbing enterprise of the southern states. The business is largely seasonal in character; and the profits of the carriers, in the early days, had to be made between September and January. This concentration of interest in the movement of the cotton crop has been changed as it was being supplanted by a general movement of traffic. But the rate system in force is an outgrowth of the conditions prevalent in the early days. The widespread existence of water competition is another complication in the rate-making of the southern states. Its entire territory is threaded with a series of more or less navigable watercourses which penetrate from the seaboard or the Mississippi River, far into the interior. There was active competition between the railways and

14. Ripley, W.Z., Railroad Rates and Regulation, p.360.

15. Ibid., p.384.

the waterways for the transportation of the products that were collected in these interior centers. In order to secure a portion of the traffic the railroads were forced to meet the rates of the water lines at competitive points, while at non-competitive points, they were able to charge higher rates.

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The principle of the basing-point system is this: "Certain cities are established as basing points, and rates to all other places in that neighborhood are made by adding to the through rate into the basing point, the local from that city to the final destination. Since local rates in the South, based upon slender local traffic, are always exceedingly high, this appears to confer a very great advantage in the matter of charges on the cities thus favored." This system of rates is most certainly not one of absolute justice and fairness to all places. From this point of view, it cannot stand comparison with the distance principle. As it is applied more and more the "basing-point" rate system in the south will no longer be needed.

In the region west of Lake Michigan and of the Mississippi River south of Wisconsin a third general system of railway charges has been established. It is a system of differentials based upon the rates from New York to Chicago and St. Louis. This system was created because of the rivalry of Chicago and St. Louis as distributing centers for the trade of the Mississippi Valley and the central west. Thus it has a marked effect on the rate structure in this region. On the traffic which moved westward from the two cen-

ters, St. Louis and Chicago, to the Missouri River cities, the railroads fixed such rates as would enable products moving from or through either of these centers to be marketed in the Missouri River towns at practically equal prices. Such a system of rates made it possible for the Missouri River cities, Chicago and St. Louis, to compete as market centers for the commodities of a vast territory to the west and south of them.

The rates applying to the transcontinental lines has been in many ways like that in the territory of the Southern Classification. Their traffic has been strongly influenced by the competition of water carriers, as it could move westward by way of the Isthmus of Panama and around South America; likewise for the eastward traffic. To meet this water competition, the transcontinental railways have been compelled to make low through rates in order to enable them to secure a portion of the business. Secondly, most of the transcontinental lines, except the Southern Pacific with its eastern terminus at New Orleans, have had a special interest in building up both manufacturing and jobbing business at their eastern terminals at Chicago or Missouri River points. Such a policy enabled them to secure the whole traffic for the transportation of commodities to the Pacific coast, without the necessity of a prorating division, as when goods are hauled from the Atlantic seaboard cities. The situation as such resolved itself into a competition of markets. Chicago, St. Louis, and St. Paul were pitted against New York, Philadelphia, and other Atlantic cities in ri-

16. Johnson, Principles of Railroad Transportation, p.360.

17. Ripley, W.Z., Railroad Rates and Regulation, p.397.

valry for the trade of the Pacific coast. In order to benefit the cities in which they had a peculiar interest, the all-rail lines have made a rate system with the following features: (1) Blanket rates are given for both class and commodity shipments, on the westward haul from most points east of the Mississippi River to the Pacific coast. As a consequence, every city east of the Mississippi, for some years, has been obliged to ship goods to San Francisco at the same rate which is paid from Boston and New York, which may be more than a thousand miles farther away. (2) On the traffic which moved westward to intermediate points in the Rocky Mountains, the railways fixed a charge higher than the through rates, the higher charge being fixed by the addition to the through rate of either fixed amounts or the local rates back from the Pacific terminals. The defence of the railways for this situation was that the low through rates were compelled by water competition.¹⁸

On many commodities imported into, and exported from the United States, the railway charges between seaports and interior markets are less than the charges on the same commodities shipped on domestic trade. The outcome of this situation was due to the keen competition among the railway carriers, the low charges of ocean transportation and the trade rivalry of seaports.

(C) Pooling and Rate-making

The railway business in the United States, as in Great Britain, was for a number of years, regarded as entirely

18. Ripley, W.Z, Railroad Rates and Regulation, p400.

ordinary. It was assumed to be, like any other branch of business enterprise, a thing which competition could efficiently regulate. It was thought by the public that railway charges could be reduced by the force of competition. The assumption that competition regulates charges does not hold good with respect to direct railroad competition. As we saw in examining its underlying principles, a railroad represents a permanent investment. Competition may force down rates, and the road go into bankruptcy, but it does not cease operation. Its ownership may change hands through foreclosures, but the struggle for business goes on. The deeper a railroad is involved the more vigorously will it endeavor to obtain traffic and the lower will it cut rates. Unrestrained competition among railroads instead of acting as a regulator of rates often produces rate wars, discriminations, and insolvency.

Such being the nature of competition in railway affairs, some means for regulating its action are necessary if the service of railroad transportation is to be performed with profit to the companies having it in charge and in accordance with the best interests of the public. With these points in view, competition among railroads must be stopped. But they cannot stop unless by common consent. Thus agreements to maintain rates among railroad carriers come into existence and serve as an alternative for competition. During the early seventies these agreements were common and were entered into openly. They were generally executed by the general freight agents of the competing roads. These agreements in many cases worked well because rates were maintained and

disastrous competition avoided. But on the other hand, many were failed. They failed because there was too much inducements to break them, and no authority to enforce them. They were wholly based upon confidence. When they believed that other roads were making concessions to secure traffic, they made concessions themselves. An agreement which each party fails to live up to is often worse than no agreement. Its result is to substitute secret competition for that which is open, and the former is worse than the latter.

If agreements to maintain rates could be made enforceable, many of the difficulties attending them would be obviated. But the difficulty with all rate agreements, whether enforceable or unenforceable, is that they do not remove the incentive to competition. The railroad officials soon recognized this in the case of the early rate agreements. They saw that the railway, in order to avoid the effect of railway competition, was to remove the inducement to compete. With this object in view, they resorted to pooling.

A railroad pool, as defined by Noyes, is an agreement between competing railroads to apportion competing business. More precisely, it is an agreement made by several railroads competing for business to allot to each a stated percentage of the whole competitive traffic, or of the receipts thereof, together with a mutual guaranty that each road shall receive its share. The purpose of pooling is to maintain rates and remove the incentive to competition.

Railroad pools are of two kinds: (1) traffic pools; (2) money pools.

A traffic pool is an agreement whereby each member is assured of receiving only a stated percentage of the competitive traffic. The percentage of this competitive traffic is determined by the share of total traffic which each railroad carries under normal and peaceful conditions of rivalry. If any member of the pool has received less than its allotment of the traffic, the organization having the management of the pool in charge requires the railroads hauling more than their allotted share of the traffic to pay a stipulated portion of the receipts from the excess to those roads hauling less than their allotted percentage.

A money pool is an agreement whereby each member is assured of receiving only a stated percentage of the receipts from competitive traffic. It may be based either upon gross or net earnings. The percentages of the members are determined by past earnings. But as one road might incur extra expenses in moving a far greater bulk of traffic than its proportion of the earnings called for, it was customary for each road to retain a third or a half of the revenue it derives from that traffic, and to turn the remainder of the receipts into the pool, to be distributed periodically among the pooling roads in accordance with the percentages stipulated in the agreement.¹⁹

The first important railroad pool was established in 1870. The Northwestern, the Rock Island and the Burlington Roads which

connected Chicago and Omaha, were not far different in financial means and had about equal facilities for hauling the traffic. Accordingly a pooling agreement was made allotting to each road a third of the business. This pool was successfully maintained for fourteen years. In 1884 it was merged into the Western Freight Association.²⁰

Another railway pool in this country was the Southern Railway and Steamship Association, established in 1873-75. This came later to cover the territory east of the Mississippi River and south of the Ohio and Potomac. The pool covered only the cotton business of the roads. Its members were both railroads and steamship lines. Under such a pool, all rates for the competitive traffic were directly controlled by a general commissioner with large powers acting under the supervision of an executive committee.²¹ This association continued its power until it was declared illegal in 1887.

The traffic between the Atlantic seaboard and the Middle West was ruinous to all competitors. Its pooling was by far the most difficult to make and enforce. After three years of strife, much of which consisted of violent rate wars, there followed the failure of the Saratoga Conference; a pooling agreement was finally effected between the chief lines of this territory. An executive committee of the Trunk Line Association, composed of the Pennsylvania, the New York Central, The Erie and the Baltimore and Ohio

20. Johnson and Van Metre, Principles of Railroad Transportation, pp.294-95.

21. Noyes, W.C., American Railroad Rates, p.143.

was created. In 1877 the westbound traffic from New York was apportioned between these four lines and in 1879 eastbound traffic was included. During this year a Joint Executive Committee was founded to supervise the pooled business and to apportion the "differential" rates which Philadelphia and Baltimore should have²² as compared with New York and Boston on the western business. In 1885, it was reconstructed as a money pool with monthly deposits and settlements. The Joint Executive Committee continued as effective pooling organization until 1887 when pooling feature was necessarily eliminated.

While the pools mentioned were the most important, many other pools existed in the United States in the year preceding 1887, the Southwestern Association came in 1876; and from 1876-1887 there were formed the Northwestern, the Colorado, the Western, the Pacific Coast, and the Transcontinental, Associations.

The result of pooling agreements to railroad rates is this. It is not designed to increase charges. The purpose of a pool is merely to make rates uniform as well as stable. In the seventies and early eighties, as we know, when pools were most prevalent in this country, rates steadily declined. Can a pool, then, check the decline in rates? In so far as direct competition tended to accelerate the decline, pooling, by eliminating that competition, tended to stay it. However, direct competition was not an important factor in making the general decline in charges.

It acted only upon competitive rates and tended rather to make local charges up than down. Rates steadily declined under the pooling agreements and cannot be safely asserted that they would have declined much faster if the pools had not existed. In fact, the pools by eliminating ruthless competition enabled the railroads the better to avail themselves of those physical improvements which were the most important factors in bringing about the decline in charges.

CHAPTER VII

Competition of Railways with Waterways

(A) Origin of rail and water competition

Before the introduction of railways in the United States, the rivers and lakes were the main highways of traffic between the interior and the seaboard, and the chief centers of trade were the seaports and cities located on navigable waters. When the early railroads were constructed, they were naturally made to connect the ports with inland markets. In order to secure a portion of the traffic the railroads were compelled to compete with the rival water routes, thus the carriage of coal by the Reading Railroad from the Schuylkill regions to tide water in competition with the Schuylkill Canal, and the carriage of flour over the New York Central in competition with the Erie Canal, and the Illinois Central in competition with the Mississippi for a thousand miles and all over the south as a freight carrier.

(B) Reasons why Waterways could not successfully compete with Railways

An important reason why the rivers and canals of the United States have been unable successfully to compete with the railways has been the natural inconvenience of the service rendered by the boats. When a shipper requires rapid transit for his freight or for the continuation of all classes of freight movements, the railroad is favorable, especially in the winter months when the rivers and canals were closed by ice or when freshets

1. Ringwalt, Development of Transportation System in the United States, p.113.

damaged canals. A vivid picture of this state of affairs is furnished in an article advocating the construction of the Erie railroad. It says: " It would prevent a recurrence of the state of things which now exists in the city of New York. There would not then be, as there now are, thousands of barrels of flour and other kind of produce in proportion, frozen up in canal boats and in sloops of the Hudson; salt would not be now selling in Albany for \$2.50 per bushel and pork at \$2.00 per hundred for want of salt to save it, whilst pork is worth from \$5.00 to \$7.00 in this city. Coal would not then sell here for \$15.00 or \$16.00 per ton; nor oak wood at \$9.00, and hickory at \$13.00 per cord, as has been the case for two or three weeks past, if railroads were in general use, but all kinds of business would move on regularly and be more equally divided through out the year. Produce could come to market as well in January as in July; and the farmer would not be obliged, in order to get his crop to market in the fall, to neglect preparing for the next.²"

Another important reason, undoubtedly, why the waterway could not successfully compete with the railway was that there had been almost no improvement in river or canal boats or terminal facilities for a long period of time; while at the same time, the railroad had made a progress in the physical factors, the improvements of rolling stock and the increase of the power of locomotives. These things led to the belief that it could move

2. Ringwalt, Development of Transportation System in the United States, p.106.

freight in large quantities over long distances at the rate of 1.5 cent per ton per mile. Moreover, the railroad runs through certain territory where it has scores of stations supplying it with traffic, and many of them are so situated that they control freight that can find no other outlet. The steamship line that serves one port or two, as many of them do, must find its freight there or nowhere, and in the port where competition is free, the freight may go to any rival.

No one will deny that transportation by rail is faster and better than by water. The freight car can move into a shipper's warehouse to get goods as well as on the road's main line. All goods shipped by water, on the other hand, must in some way be hauled to and from the water's side and be transferred to and from the boat. Therefore, to compete successfully with railways, boats must make rates to shippers not only as low as, but lower than those of railways.

The water carries freight more cheaply, but under normal conditions, the railways deliver it more quickly. Shipping is confined to routes where water runs or is made to run, but the railway climbs hills, skirts mountains, tunnel ridges, and goes everywhere.

The last, but not the least reason why the water carriers of the United States cannot successfully compete with rail carriers is the comparative inefficiency and inconvenience of the service rendered by the boats. The railways not infrequently have soliciting staffs engaged in beating the country adjacent to their lines for traffic. Most of the large systems have traffic

representatives in all large cities. If a shipper has a consignment of freight to send he can always find a solicitor of the road over which he wishes to route it. When he delivers his goods to the railway, it issues to him a merchantable and bankable bill of lading which protects him against loss of, and damage to, his goods. But if a shipper wishes to make a shipment by an independent line on the Great Lakes, he has first to hunt up a captain who may or who may not have two or three boats available. On delivering his goods he gets a receipt which affords him little or no protection against loss or damage. Conditions such as these have put waterways at still greater disadvantage in competing with the railways.

Competing with some of the American railways are some of the most flourishing lines of water traffic known, but does any one recall a case where the railway has been injured by it? Take the New York Central and connecting lines to Chicago, for example. It has vigorous water competition all the way, and it has had to build three or four tracks to take care of its tonnage. The most prosperous railway lines in New England compete with Long Island Sound, one of the greatest inland waterways in the United States. And the Atlantic coastlines compete with the Atlantic ocean.³ Mr. James J. Hill once said: "No vessel of one thousand tons burden can compete with a box car." This statement, as it now proves, is true.

3. Quick, A., American Inland Waterways, p. 63

(C) The Waterway a regulator of railway rates

The competition of the American railways with other routes brought out most emphatically the necessity for low charges. From their very beginning, railways have been compelled to compete with water routes in order to secure a larger traffic. Railways between cities that were connected by water were obliged to reduce their charge between subpoints to a level that could attract at least a portion of the traffic to the rails. Therefore, the waterway is a good freight rate regulator of railways. By this it is meant that it should reduce the rate of competing railways. Railway rates in all parts of the United States have been considerably affected by the competition not only of the Coastwise and Great Lake routes, but also the rivers and canals. For instance, along the Mississippi River, all the way from New Orleans to St. Paul, rates were lower than they could be if uninfluenced by the river. The rates between Buffalo and New York have also been considerably affected by competition via the Erie Canal and the Hudson River. Between innumerable other ports, particularly in the southeast, freight of railways are greatly influenced by minor streams which parallel the railways.

The public estimation of the value of competition of waterways with railroads was stated in 1867 in the report prepared by a Senate committee, of which Hon. Shelby M. Cullom was

chairman. The report stated that " the evidence before the committee accords with the experience of all nations in recognizing the water routes as the most efficient cheapness and regulators of railway charges. Their influence is not confined within the limits of the territory immediately accessible to water communication, but extends further, and controls railroad rates at such remote interior points as have competing lines reaching means of transport by water. Competition between railroads sooner or later leads to combination or consolidation, but neither can prevail to secure unreasonable rates in the face of direct competition with free natural or artificial water routes. The conclusion of the Committee is, therefore, that natural or artificial channels of communication by water when favorably located, adequately improved, and properly maintained afford the cheapest method of long distance transportation now known, and that they must continue to exercise in the future, as they have invariably exercised in the past, an absolutely controlling and beneficially regulating influence upon the charges made upon any and all means of transit."

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(D) Co-operation and Combination of Water and Rail Carriers

Waterways are both competitors of and co-operators with the railroads. As competitors of the railroads, waterways place a limit on the maximum charges which the rail carrier may impose. The most conspicuous instance of this fact is the effect

of the rates on the Great Lakes upon the charges of the railroads that compete for the traffic free to move either by the lakes or by rail. The Erie Canal, in the past, has placed a very definite maximum limit upon railroad charges between the lakes and tide water.⁶ The constant interchange of a large volume of traffic compels water and rail carriers to co-operate. The cheapening in cost of transportation during recent decades has enormously increased the tonnage of international commerce. The markets for even heavy commodities have become world wide, and the organization of trade upon the basis of a world market renders more and more necessary a close co-ordination of the service of rail and water carriers.

Therefore, there is no reason why the two systems of transportation should be unfriendly, and it is natural that the necessity of the co-ordination of both steamship and railroad lines should develop unity of service. The railroad line with steamship feeders would be benefited thereby and at the same time steamship lines with railroad alliances would be better served. There is a common want and a mutual advantage- each can help the other in its desired extension of service.

CHAPTER VIII

Railroad Regulation

(A) Causes of State Regulation and Its Action

The ideal of state regulation is to center all of its force in the efficiency of management. It is concerned mainly with matters of safety and the reasonableness of rates.

Since the state had the right through its legislature to charter a corporation to construct and operate a railroad within its border, it is natural that the state was in a position to exercise and control over the railroads. However, the exercise of such control was very slight, for the charter failed to regulate traffic. This failure was due to the inadequacy of the provisions in the charters, which had granted to the companies unlimited rights¹ and privileges. Thus during the period 1870-77, the abuses of discriminatory rates became acute, and since the railway was assumed to be a public carrier, the state legislature had therefore the right² to regulate its operation and rates, irrespective of the charter.

During the period from 1850 to 1870, the chief interest centered in the question of building, rather than in the question of regulating railroads.² The confidence of the public at

1. Raper, C. L., Railway Transportation, p.247

2. Dixon, F. H., State Railroad Control, p.7

this time was based on the theory that unrestrained interrailway competition³ would serve as a regulator of the railway business. The public rested upon the assumption that competition would guarantee fair treatment and just prices. But the railroads, impelled by the desire to increase traffic, entered upon the policy of discrimination between persons and places; thus appeal was made from the public to the government for protection.

It was at first the state government rather than the federal government, that undertook to deal with the question, the protection of the public from the arbitrary rulings of the railroad corporations. The policy of the railroad regulation in this country was the policy of control through commissions. There are two kinds of commissions: the one of which has been called the weak commission, the other, the strong commission. The Massachusetts commission serves as a type of the former; the Illinois, of the latter. The chief difference between these is that a commission of the Massachusetts type, established in 1869, sometimes called an "advisory commission", confines its activity to supervision, either of construction or of capitalization.⁴ It possesses only the power of investigation of rates and of recommendation of changes. Such a commission relies mainly upon public opinion for the enforcement of its decisions. In the case of Massachusetts, the commission enjoyed the confidence of the public, and was very successful in regulating the railways.⁵ Several commis-

3. Johnson, E.R., Principles of Railroad Transportation, p.468.

4. Ripley, W.Z., Railroad Rates and Regulation, p.628.

5. Johnson, E.R., Principles of Railroad Transportation, p.473.

sions of this type were established in other states, such as New York, Connecticut and Vermont, though none of these had any authority over finance.⁶

A commission of the Illinois type, on the other hand, in addition to the general functions of an advisory commission, is clothed with some degree of authority respecting the determination of rates. In 1871, and 1873, a law was passed empowering the commission to prescribe "a reasonable maximum rate of charges for the transportation of passengers and freight." It had the power to compel the railway companies to obey the commission's decisions or to force them to obey the laws regulating railway transportation.⁷

Other states in the West and South passed laws similar to the Illinois statutes just described. In 1874 Iowa and Wisconsin passed maximum rate laws. The same year, Minnesota established a commission clothed with power to prescribe rate schedules. In 1879 a law was passed in Georgia by which a commission was instituted with power to fix rates.⁸

(B) Causes of Federal Regulation and Its Action

Shortly after the state began actively to regulate railroad charges an agitation was begun for the regulation of railroads by the federal government. Several of the economic

6. Ripley, W.Z., Railroad Rates and Regulation, p. 628.

7. Johnson, E.R., Principles of Railroad Transportation, p. 476.

8. Johnson, E.R., Principles of Railroad Transportation, p. 477.

causes led to the Act to Regulate Commerce of 1887. Foremost among these was the rapid expansion of the railway net; more new mileage was laid down in the year of the act than in any other similar⁹ period.

Of equal significance was the development of long-distance traffic for the through carriage of live-stock and other products to the East and a corresponding movement of manufactured goods to the Middle West.¹⁰ In the expectation of securing this traffic, rate wars were engaged in by the big systems, which brought with them abusive discriminations on a very large scale. An appeal was therefore made to Congress for legislation and in response to this call, a committee was appointed to investigate the question "of securing cheaper transportation of the constantly increasing western and southern products to the Atlantic seaboard." The chairman of this committee was Windom, of Minnesota, and the report made in 1874 maintained that the through rates on traffic from the Central West to the East were too high, and that the federal government had the right to make reductions in them. The suggestion made by this committee was to secure cheap rates by means of water and rail competition. The committee had neglected the main points. The chief abuse was not in the size of these rates but in their discriminations

9. Ripley, W.Z., Railroad Rates and Regulation, p. 442.

10. Johnson, J.B., Principles of Railroad Transportation, p. 492.

especially in the discrimination in favor of the long distance competitive traffic over the non-competitive traffic.

During the twelve years of the report of the Windom committee, many things happened. By 1886, according to the Cullom committee, " the paramount evil chargeable against the operation of the transportation system of the United States, as now conducted, is unjust discrimination between persons, places, commodities, or particular descriptions of traffic." Purely economic events had brought about this change of opinion. The rate wars of the seventies, a revival of general prosperity in 1879, and great mechanical improvements and economies in operation, had brought about the desired decline of freight rates.¹¹ In a word, the public demand for cheap transportation was now altered to a demand for the abolition of unreasonable discriminations. The Cullom committee, consequently brought in a bill, the distinctive feature of which¹² was provision for a permanent administrative commission and the¹³ publicity of rates as a primary remedy of the evils of the time.

An immediate cause for the demand for federal regulation of the railroad business was the inefficiency of control by the states, for the states could not extend their control to cover entirely the operation and traffic of the railways. Almost as much as seventy per cent of all the traffic in the United States

11. Ripley, W.Z., Railroad Rates and Regulation, pp.22 and 411.

12. Ibid., p. 451.

13. Ibid., p. 446.

moves across the borders of states. In 1886 the Supreme Court, in the Wabash decision, limited the authority of the state strictly to the intrastate traffic and excluded the movement from one state to another. This decision of the Supreme Court greatly limited the jurisdiction of each state over railway charges, and increased the
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need for congressional action.

The Interstate Commerce Act of 1887 applied to all interstate transportation by rail alone, or by rail and water and to to an extent to the transportation between the United States and foreign countries. It did not apply to intrastate traffic nor to interstate or foreign traffic carried entirely by water.

Following is a brief summary of the provisions of
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the Act to Regulate Commerce:

Section 1. Applies to freight and passengers by land; or by land and water in cases of continuous or through shipment, even to foreign countries. All charges shall be reasonable and just; and every unjust and unreasonable charge is prohibited.

Section 2. Rebates and personal discrimination of every sort forbidden.

Section 3. Local discrimination forbidden; equal facilities for interchange of traffic with connecting lines prescribed.

14. Johnson, E.R., Principles of Railroad Transportation, p.495.

15. Ripley, W.Z., Railroad Rates and Regulation, pp.452-53.

Section 4. Long and short haul clause: " That it shall be unlawful for any common carrier subject to the provisions of this act, to charge or receive any greater compensation in the aggregate for the transportation of passengers or of like kind of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the direction, the shorter being included within the longer distance; but this shall not be construed as authorizing any common carrier within the term of this act to charge and receive as great compensation for a shorter as for a longer distance: Provided, however, That upon application to the Commission appointed under the provisions of this act, such common carrier may, in special cases, after investigation by the Commission, be authorized to charge less for longer than for shorter distances for the transportation of passengers or property; and the Commission may from time to time prescribe the extent to which such designated common carrier may be relieved from the operation of this section of this act."

Section 5. All pooling and traffic agreements prohibited.

Section 6. All rates and fares to be printed and posted for public inspection at all stations; and filed with the commission at Washington. No advance in rates except after ten days notice. All charges, other than published, forbidden.

Section 9. Procedure by complaint before the commission or federal courts. Power to compel testimony and production of papers .

Section 10. Penalty of \$5,000 for each offence in violation.

Section 11. Interstate Commerce Commission of five members established; by presidential appointment; terms six years.

Section 12. Powers of commission to inquire, with right to obtain full information necessary to exercise of its authority. Power over witnesses and production of papers, to ^{be} sustained by United States Circuit Courts.

Sections 13-14. Procedure before commission by complaint. Parties competent to appear. Decisions to include findings of fact upon which based, for courts on appeal.

Section 15. Duty of commission to notify carriers to "cease and desist" from violation, or to make preparation for injury done.

Section 16. To enforce obedience, procedure by petition of commission in federal courts, which may issue writs.

Section 20. Annual detailed reports from carriers as to finance, operation, rates or regulations in prescribed forms as desired by the commission.

Such is the substance of the statute which marks the real beginning of subjection of the railroads to control by the federal government.

CHAPTER IX

Development of Railway Organization

During the early period of railway enterprise, its organization of management was very simple. H. S. Haines, in referring to this subject says: "There are those among us whose memory goes back to the patriarchal stage of management, when most corporations owned not more than fifty or hundred miles of track; when the treasurer sold the tickets at the principal passenger station on the road, and the freight agent at the same station was virtually the head of the transportation department; when no bill was paid except upon the order of the president, and periodical reports and statistical statements were unknown."

With the increase of mileage and the growth of business, enlarged systems of organization were necessary. In the management of a first class road, two grand departments were established. One related to financial affairs controlled by president, secretary, treasurer, attorney and directors. The other was the operating department, attached by a commercial branch and a mechanical branch. They were, in turn, subdivided under the direction of general superintendent. The principal officers consisted in the sub-group were, a superintendent of road, with road masters as his leading assistants. In the second, there was a superintendent of machinery, whose chief assistants were a foreman of a blacksmith shop and blacksmiths, a foreman of a car shop and carpenters, a foreman of a paint shop and painters, engineer (not on trains) and fireman, and

car masters who directed operations of oil men and cleaners; a general passenger agent whose chief assistants were conductors and mail agents who directed the laborers of brakemen and ticket agents station agents, express agents, and police, a general freight agent whose principal assistants were conductors who directed laborers of brakemen and engineers on freight trains, freight station agents, weigher, gaugers and yard masters; a supply agent and a fuel agent,² each of whom had appropriate assistants.

In the period of 1890, a highly specialized organization was elaborated. The railroad company, like other common corporations, has in its organization departments and officials for the management of its financial and legal affairs. The stockholders, who are the owners of the company, choose directors serving as a governing body, and the directors, in turn, select a president, secretary, comptroller, treasurer and a legal counselor. Within this corporate organization, a specialized organization to perform the function of transportation service is formed.

The president of a railroad has general supervision and direction of all departments. Under his immediate control are the secretary's office and the legal department. The function of the secretary is to give notice of all meetings of the board of directors and to keep a record of its proceedings. He signs all stock certificates and has custody of all leases and contracts made by the board.³

2. Ringwalt, J. L., Development of Transportation System in the United States, p.362.

3. Peabody, James, Railway Organization and Management, p.15.

At the head of the legal department is the general counsel, who with the solicitors under his direction looks after the legal business and the general charge of all its litigation.⁴

The financial department is concerned with the financial affairs of the company and is the custodian of all the company's funds and its pay-master for all departments. It is responsible for all securities and for the proper form of all stocks, bonds, and notes. The principal officer in this department is the treasurer who keeps a set of books showing the receipt and disbursement of all funds he handles. His books are audited monthly by the comptroller, who, at the end of each fiscal period reports to the board of directors.⁵

The part of the railroad organization most directly concerned with transportation is the operating department. This department performs three general duties: it provides and maintains the roadway; it supplies and maintains the locomotives and cars; it runs the trains and conducts the service at passenger and freight stations. Each of these three duties is constituted as a distinct part of the service.

The principal official of the operating department is the general manager, who is the most responsible and usually the hardest subordinate officer in the organization. His duty is different in scope on different roads. On all roads he is in direct charge of operation and receives reports from the general

4. Morris, R., Railroad Administration, p.30.

5. Byer, M. L., Economics of Railway Operation, pp.23-28.

superintendents, who, in turn, act through the division superintendents. Thus he controls all train movements, and is the responsible authority in cases of delays, or of wrecks, or of special demands on the company's facilities.⁶

The first of the three divisions of the operating department is the construction department, the head of which is the chief engineer, who is responsible for construction on the railroad, such as roadbed, track, bridges, culverts, buildings and numerous other structures. Subordinate to the chief engineer are engineers in charge of maintenance of way, and maintenance of bridges and buildings.⁷

The next division of the operating department is the mechanical department, which is charged with the design, operation, and maintenance of all the equipment--locomotives, cars, wrecking tools etc. Its work is broadly divided into a motive power department, in charge of locomotives, and a car department, in charge of cars. The whole department is under the charge of a general superintendent or chief engineer of motive power, with a master machinist, and a master car builder as his assistants.

The last division of the operating department is the transportation department, which performs the actual work of moving persons and freight. The head of this department is the general superintendent of transportation, who, under the direction of the General

6. Dewsnap, E. R., Railway Organization and Operation, p.141.

7. Johnson, E. R., Principles of Railroad Transportation, p.244.

Manager, has general supervision of all station, train and yard service and of the distribution and use of locomotives and cars. It is his duty to enforce proper rules to secure as prompt, safe and economical service practicable. Under his immediate direction are a superintendent of transportation, and the superintendent of telegraph. The principal duty of the superintendent of transportation is to aid the general superintendent of transportation in all matters relating to the prompt movement of the equipment, and the prompt movement of live-stock and other matters connected with train service. The superintendent of telegraph is to supervise and control the management of the railroad telegraph and telephone lines and the construction and repair of all lines of telegraph and telephone.

The most important department in the organization of a railway corporation is the traffic department, for it is the medium through which the relations of the carrier and its patrons are adjusted. It solicits business; classifies the traffic, determines charges and settles the claims of passengers and shippers for lost baggage and freight.⁹ This department, as was the case in the operating department, is divided into two main branches. These two branches are the passenger traffic and freight traffic, both of which are under the direction of one of the vice presidents of the company. Let us discuss each separately.

The most important duty of the freight traffic department

8. Byers, M. L., Economics of Railway Operation, pp.37-39.

9. Morris, R., Railroad Administration, p.33.

is the sale of transportation and the procuring of revenue-producing business. It is this department which has the closest relationship with the shipping public, as its entire intercourse is with the shippers and receivers of the freight. Although the vice president has general supervision over all traffic matters, both passenger and freight, the actual charge of all freight matters is under the immediate direction of a freight traffic manager. He assigns duties to his various assistants as to the general freight agent, the division freight agents and the managers of the fast freight lines. Their duties, assigned by the freight traffic manager, are indicated by their titles.

The passenger traffic department has charge of all matters relating to passengers, including baggage, mail, and express. The duty of the passenger traffic manager is to hold himself responsible for passenger train service and for all traffic that is handled by it. Under the passenger traffic manager are the general passenger agent, and the division passenger ticket agents. The general passenger agent is the representative of the passenger traffic manager in certain designated territory. He has charge of the employees and work of the passenger department. The baggage agents are to make rules for handling baggage, collecting for excess baggage, and adjusting claims for loss or damage to it.

The railroads are very large owners of real estate, the purchases and transfers of which are in charge of a real estate agent, who is the custodian of all original copies of deeds,

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releases, leases, maps and records of real estate.

There is another department in the railway organization which is called the purchasing department. The work performed by this department is to supply material required by various departments. The purchasing agent is at the head of the department, and subordinate to him are the store keepers, who distribute the supplies upon the presentation of properly authorized requisitions.

However, the organization of a railroad company up to the period of 1890 seems very much complicated. It would be better to illustrate them by means of a diagram showing the main departments and the principal sub-divisions in the organization of all large railroad companies.

CHAPTER X

Conclusion

In 1790, the population of the United States was not more than four million while in 1890, it was estimated at sixty-five million. Enormous as was this increase in the population of the country within the short period of a hundred years, the increase of material prosperity resulting from the rapid development of the wonderful resources of the country were in even greater ratio; it had, in fact, no parallel in the history of the world. These wonderful results, as we know, were due chiefly to the rapid expansion of the railroad system of the United States. What conditions would be without railroads it is impossible to say, what they have become, having them, is a permanent tribute to their value.

Of the total railroad mileage of the world, the United States in 1890, had nearly one-half. At the close of 1890, the aggregate length of the lines in the country was 163,597 miles, all built in sixty years. The average mileage constructed per year was nearly 2,730 miles. But this record of sixty years, wonderful as it was, faded into insignificance when compared with the achievement of the twenty-five years since the close of the Civil War.

The total length of the railroads at the end of 1865 was 35,085 miles. In the twenty-five years since then they had been constructed 131,000 miles of new road, an average of 5,260 miles

per annum, twice the annual average of the whole period of sixty years, and 5.3 times the annual average of the first period of thirty-five years. During these twenty-five years the country encountered three great waves of railroad construction which were checked only by extraordinary financial revulsions.

The first of these great construction waves occurred within the eight years intervening between the close of the Civil War and the panic of 1873. In that time the length of lines constructed increased 35,085 miles in 1865 to 70,268 in 1873. The first transcontinental line, the Union Pacific, was completed in this period. The cash cost of the 35,000 miles of road constructed in these eight years was to exceed \$1,400,000,000, and the panic, which began in the fall of 1873, was probably due to the transformation of this vast sum from floating into fixed capital.

The depression extended through the period from 1873 to 1878. During 1879 matters began to improve throughout the country and the activity of railroad construction was again vigorously advanced.

During the following seventeen years there were constructed 95,665 miles of railroad, an increase of 26,066 miles of railroad beyond the road constructed in the preceding forty-five years. The first five of these seventeen years comprised a period of depression; the next four years were years of unexampled activity, although the three years of 1883, 1884 and 1885 were years of hesitancy, in which no new railway enterprise of great magnitude

was begun, as was natural, after the completion in a single year (1882) of 11,610 miles of road. In 1886 there were constructed 8,128 miles; in 1887, 12,984 miles; in 1888, 7,028 miles; in 1889, 7,170 miles and in 1890, 9,725 miles.

Since the revival of railroad construction in 1879 there had been completed three additional through transcontinental lines, the Northern Pacific, the Atlantic and Pacific, and the Southern Pacific; while the Union Pacific by the construction of its Oregon Short Line northwest to a connection with a branch of the Oregon Railway and Navigation Company's system, the Atchison by the construction of its line to a connection with the Southern Pacific, and the Chicago, Burlington and Quincy, by the construction of its Denver extension had added three other important routes to the Pacific.

This period was not only remarkable for the construction of new lines but also for a development of the larger transportation units. Up to 1870, 100 miles in length constituted the maximum for efficient operation. The Illinois Central, with 700 miles of length, was considered one of the longest railroads in the world. ¹ From 1870 to 1890, the maximum length of a single railroad was about 5,000 miles. The Pennsylvania first reached the length of about 4,000 miles in 1880. Two years later the Lake Shore and Michigan Southern absorbed its parallel line, the "Nickel Plate" road. In 1885 the New York Central, by consolidation the West Shore and the Van-

1. Ripley, W. Z., Railroad Finance and Organization, pp.456-57.

derbilt System under common control first attained sizable proportions. Even west of Chicago, the Vanderbilt interest was already strong in the Chicago and Northwestern which by 1886 had about 3,500 miles of line. By 1889 the Union Pacific, besides 2,000 miles of line it owned, controlled nearly 4,000 more. Therefore, the process of consolidation has given each of the several companies the ownership of more than 5,000 miles of road. Collis P. Huntington held advanced ideas upon the subject of consolidation. In 1887, before the railway commission, he said: "It has been my view for a good many years that there ought not to be more than three or four transportation companies in the United States.... In fact, it would be better, I think, if there was but one.... It would serve the people a great deal better, and do business² cheaper.

The total mileage of the railroads in the United States, in 1890, was reported as 163,420; the cost of the railroads of the country would average \$61,942.45 to the mile, the total for the 163,420 miles, being in round numbers, \$10,122,639,500. It would at this time be interesting to inquire into the effect of so great a withdrawal of the active wealth of the country from immediate circulation, and its permanent investment in a form both unprofitable and inaccessible. But, on the other hand, the importance of railway construction cannot be stated with absolute accuracy, inasmuch as it touches such factors as the increase of population at given points, advances in the prices of property

belonging to private owners, and development of new enterprises. The economic prosperity of this country was undoubtedly due to the expansion of the railway system.

From 1870-1890 was a period of pooling activity among the railway companies. The object of this activity was merely to pool competitive business, but, during the time, a strong public sentiment arose against pooling. It was believed that pools kept up rates and, in avoiding competition, injuriously affected the public. Laws were enacted in several states prohibiting pooling and finally in 1887 Congress, after much hesitation, inserted an anti-pooling clause in the Act to Regulate Commerce. As we know, the prohibition of pooling by the Interstate Commerce Act was a failure. The railways were driven to other means to avoid the effects of competition, if any could be found. After 1887, the traffic associations, with the pooling arrangements eliminated, continued in existence.

For the protection of commercial and industrial interests, government regulation of transportation rates is necessary. The exercise of power over transportation companies is shared by the state and the nation. The states have power over intrastate transportation, and the federal government has power over interstate traffic and rates. The states exercise their constitutional powers of control over railroads and railroad rates through commissions. The Interstate Commerce Commission is the corresponding agent of the federal government. This commission has authority over all important interstate carriers except those operating

solely by water. Its authority extends to their rates, classifications, regulations, and practices. The federal law, when it was passed, was very successfully interpreted by the railway companies. They sought to obey its mandates both in letter and ³ spirit. The commission reported in 1888 that the railroads "conformed promptly" to their orders; although in the south and west they were "moving more slowly".

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